# CONTENTS

**CAUTION:** THIS SERVICE MANUAL IS ONLY FOR PROFESSIONAL SERVICE PERSONNEL'S REFERENCE. BEFORE SERVICING THIS CHASSIS, PLEASE READ THE FOLLOWING NOTICE ITEMS.

# 1. SAFETY INSTRUCTION AND GENERAL INSTRUCTION

Before servicing and aligning this equipment, please read the following **"X-RAY RADIATION PRECAUTION"** ,**"SAFETY PRECAUTION"** and **"PRODUCT SAFETY NOTICE"**.

### 1.1 X-RAY RADIATION PRECAUTION

1）Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is under 30 kV at zero beam current (minimum brightness) under DC135V main power(B+) , the high voltage must not, under any circumstances, exceed 32 kV.

2）Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of service record. It is important to use an accurate and reliable high voltage meter.

* When checking, main power (B+) should be kept at (135 V : for 24", 100V : for 20").

3）The primary source of X-RAY RADIATION in this TV receiver is the picture tube. For continuous X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.

4）Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continuous safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

### 1.2 SAFETY PRECAUTION

**WARNING:**

Service should not be attempted by anyone unfamiliar with the necessary precaution on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1) Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3) When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4) When replacing parts or circuit boards, disconnect the power cord.
5) When replacing a high wattage resistor (oxiode metal film resistor) on the circuit board, keep the resistor 10mm (1/2in) away from circuit board.
6) Connection wires must be kept away from components with high voltage or high temperature.
7) If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.

### 1.3 PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplement electrical components having such features are shaded on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same characteristics as specified in the parts list may create shock, fire, X-RAY RADIATION or other hazards.

### 1.4 General instruction

1.4.1 This chassis' EEPROM（N801 M24C08） should copy standard data first, if necessary, deal it with "factory adjustment". If directly use blank EEPROM, should first preset $I^2C$ data, then go on other common alignment. For factory adjustment method, refer to **The appendix: Factory adjustment mode.**

1.4.2 If without special indication, the alignment is conducted on the below condition:

a）AC power supply 120 V/60 Hz.（North America area） or others (depending on selling market).

b）The whole unit is preheated for more than 30 min.

1.4.3 There is built-in auto degaussing circuit, it will degauss automatically within 1second after turning on. And the auto degaussing circuit can effect only when turning off the set and waiting for at least 30min and then turning on.

1.4.4 If CRT is with magnetism and affects color purity and convergence, the internal degaussing can not degauss completely, can use degaussor to degauss externally. If color purity and convergence is still poor, then do color purity and convergence adjustment.

## 2 Alignment items and procedure

2.1 B+ voltage check
2.2 OSD character center adjustment
2.3 RFAGC voltage adjustment
2.4 Focus adjustment
2.5 Screen-grid voltage and white balance adjustment
2.6 SECAM colour adjustment
2.7 Horizontal, vertical scanning center adjustment
2.8 Horizontal, vertical scanning amplitude adjustment
2.9 Raster correction adjustment
2.10 The alignment flow chart see below figure.

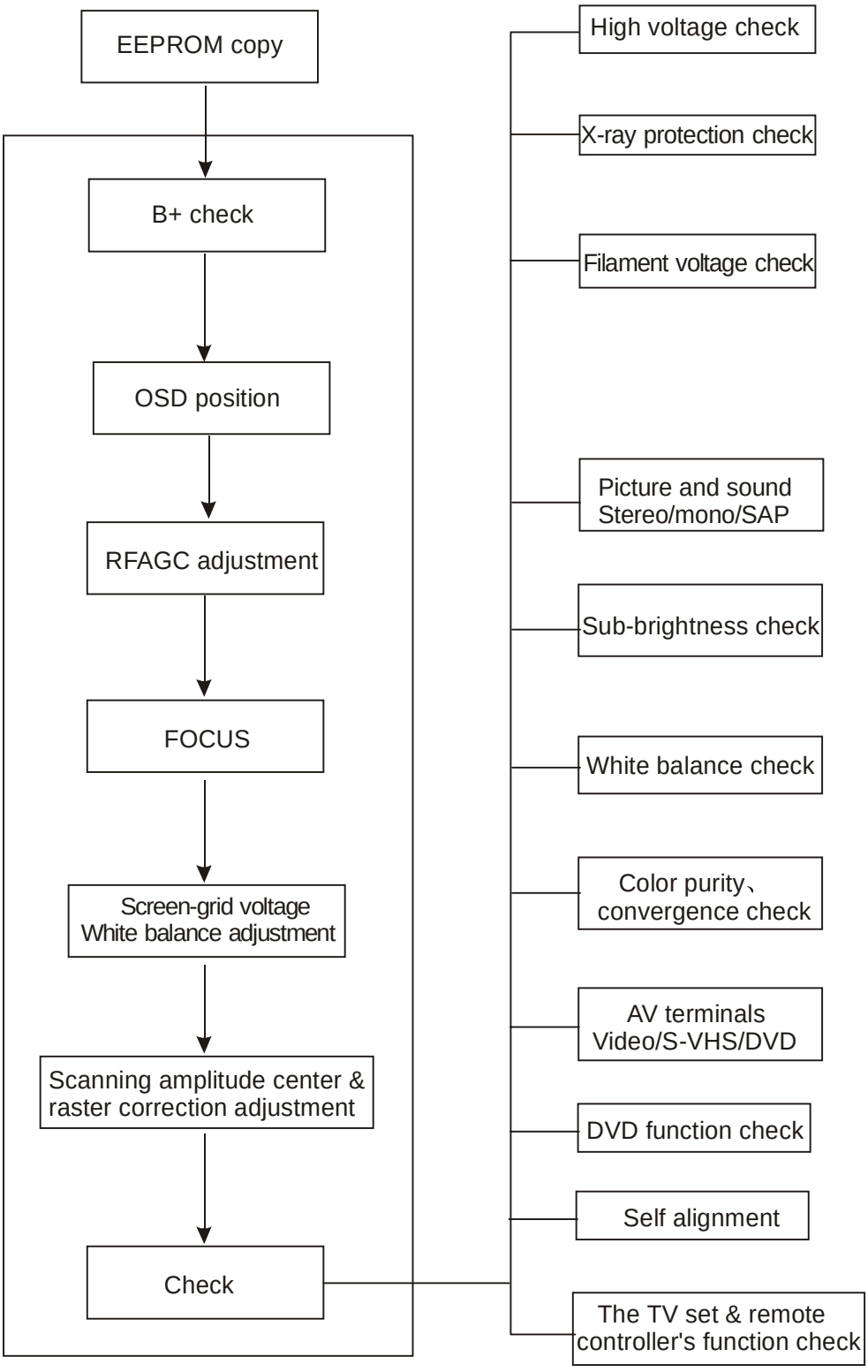



**Figure 1: Alignment flow chart**

## 3 Factory adjustment mode

3.1 Enter into factory adjustment menu

Press SLEEP→PIC→DSP→MENU button on the remote controller in order (the period of two press should be less than 5 seconds), the screen will appear factory alignment menu.

3.2 Factory menu operation

Repeatedly press "MENU" button，then the menu will enter into PAGE 1→PAGE 2→PAGE 3→ PAGE 4→PAGE 5 and recycle；press ▲ or ▼ button can select adjustment items upward or downward, and press ◄ or ► button to confirm or adjust the item's value.

3.3 To exit the factory menu

Press "SLEEP" button to exit the factory adjustment menu.

## 4 Adjustment method

4.1 B+ voltage adjustment

a）Make sure the power supply is AC120 V/60 Hz（for America or Canada area）.

b）Connect the digital voltmeter to B+ testing point，receive A7 signal, set the picture control to "STANDARD" status, adjust RP501 to make B+ voltage be (24": 135V ±0.2 V , 20": 100 V± 0.2 V ) (just for pure flat CRT, as regards to other CRT，B+ value will be marked on the parts list.）

c）In STAND BY mode, the B+ voltage will be under 20V.

4.2 OSD position adjustment

Receive NTSC signal，change the factory adjustment menu page 3 OSD item's value to make user's menu be in screen's center position.

4.3 AGC adjustment

a） Receive 60 dB split field (or grey-scale) signal.

b） Use oscilloscope or digital voltmeter to monitor tuner 1 pin's voltage （RFAGC pin）.

c）Select factory adjustment menu page 4 R-AGC item, making use of [←][ →] button to increase the value from down to up until the voltage just reach 4.0 V，at this time picture noisy spots should disappear basically. Otherwise continue to fine tune R-AGC item.

d） Exit the factory menu.

4.4 Focus adjustment

4.4.1 Receive A12 signal, set picture mode to "STANDARD" status.

4.4.2 Adjust FBT FOCUS potentiometer to make screen's B area's focus optimum.

4.5 Screen-grid voltage,white balance adjustment

4.5.1 Receive A7 split field signal, set picture mode to "STANDARD" status.

4.5.2 Keep RCUT's value, not change it （for example set it to 60），roughly adjust GCUT and BCUT value to make white balance basically normal.

4.5.3 Set colour,contrast to minimum，set brightness to 50. Use oscilloscope to monitor CRT board red gun waveform，adjust PAGE 4 BRTS value to make black level be 175 V.

4.5.4 Adjust SCREEN（accelerating electrode）potentiometer to make picture brighten 4 lattices.

4.5.5 Fine adjust white balance（colour temperature：12000K±8MPCD X=0.270±0.008 Y=0.283±0.008）.

4.5.6 Adjust PAGE 2 BRTN value to make colour ,brightness,contrast all be minimum，picture“white block”slightly lights up.

4.6 Horizontal,vertical scanning center adjustment

4.6.1 PAL（50 Hz）horizontal,vertical center adjustment

Receive G23 signal, set picture mode to “STANDARD”status, fine tune vertical center VP50，horizontal center HPOS，to make picture center be in accordance with screen center.

4.6.2 NTSC（60 Hz）H-center,V-center adjustment

Receive A6 signal, set picture mode to “STANDARD” status, adjust V-center VP60，H-center HPS，to make picture center be in accordance with screen center.

4.7 Vertical scanning amplitude adjustment

4.7.1 PAL（50 Hz）vertical amplitude adjustment

Receive D35 signal, set picture mode to “STANDARD” status, adjust vertical amplitude HIT，to make picture up/down overscanning be screen size’s 8%.

4.7.2 NTSC（60 Hz）vertical amplitude adjustment

Receive A12 signal, set picture mode to “STANDARD”status, adjust V-amplitude HITS，to make picture up/down overscanning be screen size’s 8%.

4.8 Raster correction adjustment,H-amplitude adjustment

4.8.1 PAL（50 Hz）raster correction adjustment ,H-amplitude adjustment.

Receive PAL white crosshatch signal, set picture mode to “STANDARD” status, adjust DPC to make raster distortion be in minimum, adjust WID to make picture left/right overscanning be screen size’s 8%.

4.8.2 NTSC（60 Hz）raster correction adjustment

Receive NTSC A21 signal，set picture mode to“STANDARD”status, adjust DPCS to make raster distortion minimum，adjust WIDS to make picture left/right overscanning be screen size’s 8%.

4.9 If scanning linearity distortion and raster geometrical distortion can not reach the requirements, and if necessary, can make use of factory adjustment menu to adjust the following items：

| | |
|---|---|
| VLIN | V-linearity adjustment（PAL） |
| VLIS | V-linearity adjustment (NTSC） |
| VSC | Vertical S-correction adjustment （PAL） |
| VSS | Vertical S-correction adjustment （NTSC） |
| CNRT | Top corners’ correction |
| CNRB | Bottom corners’ correction |
| KEY | Trapezoid correction （PAL） |
| KEYS | Trapezoid correction（NTSC） |

4.10 Maximum sound output power

Receive single tone signal, set volume to maximum，the sound output power is 2×3 W(24”) and 2×2.5 W(20”) .（can fine adjust factory menu V100）

## 5 Checking points

5.1 High voltage check

5.1.1 Connect high voltmeter to CRT second anode and GND.

5.1.2 Receive A7 signal, set picture mode to “STANDARD” status, measure the high voltage value, the reading should be 29 kV±1 kV.

5.1.3 When setting brightness and contrast to minimum(zero beam current), measure the high voltage value, the reading should not exceed 32 kV.

5.2 CRT filament voltage check

Receive A7 signal, set picture mode to “STANDARD” status, use effective value voltmeter to measure CRT filament voltage, the reading should be (6.3±0.3) Vrms.

5.3 X-ray protection check

5.3.1 Receive A7 signal, set picture mode to “STANDARD” status.

5.3.2 Short S301, X-ray protection circuit should effect.

5.4 Picture and sound check

5.4.1 Receive standard TV signal.

5.4.2 Make use of picture control buttons to check colour, contrast ,brightness,sharpenss,tint’s control function.

5.4.3 Make use of sound control buttons to check sound control function.

5.5 Sub-brightness check.

Receive A7 signal, set colour, contrast , brightness all to 0,picture left one lattice slightly lights up.

5.6 This set can produce 14 kinds of testing signals by itself. In factory menu when select some adjustment item, every press of AV button for one time, it will produce one testing signal.

5.7 Colour purity and convergence check (in normal way)

5.8 AV terminal input/output check

5.9 Other control buttons on the set/remote controller function check

## 6 Out-factory mode preset

Press ”SHOP OUT” button, out-factory status will be preset to:

| | | | |
|---|---|---|---|
| 6.1 | Picture menu: | Colour | 70 |
| | | Brightness | 70 |
| | | Contrast | 100 |
| | | Sharpness | 50 |
| | | Tint | 00 |
| | | Blue background | On |
| 6.2 | Volume preset to: | 30 | |
| 6.3 | Language menu: | ENGLISH | |
| 6.4 | Colour system : | AUTO | |
| 6.5 | NOISE REDUCE: | OFF | |

| | | |
|---|---|---|
| 6.6 | TV mode: | Channel positionA2 |
| 6.7 | SVM: | MILD |
| 6.8 | V-CHIP PASSWORD: | 0000 |
| 6.9 | CHILD LOCK MENU PASSWORD: | 0000 |
| 6.10 | SOUND MODE: | NEWS |
| 6.11 | TV/CATV CHANNEL: | Both set to ADD |
| 6.12 | CCD CHANNEL: | Set to OFF |
| 6.13 | V-CHIP: | Set all ratings and contents to IGNORE |
| 6.14 | V-CHIP BLOCK ON/OFF: | Set to OFF |

## 7 Power adaptability check

AC 120V/60Hz (for North America area. If have other special AC power supply requirements, then check with requirements).

## APPENDIX 1 FACTORY ADJUSTMENT MENU

| Page | Item NO. | OSD symbol | Preset | Adjustment item | Analogue setting | Input signal | Adjustment method |
|---|---|---|---|---|---|---|---|
| 1 | 1 | HPOS | 0E | 50Hz H-center | STANDARD | D35 | To make picture horizontal center be in accordance with CRT center |
| | 2 | WID | 10 | 50Hz H-size | STANDARD | D35 | To make H-size meet standard |
| | 3 | HPS | 03 | 60Hz H-center | STANDARD | A12 | To make picture vertical center be in accordance with CRT center |
| | 4 | WIDS | 01 | 60Hz H-size | STANDARD | A12 | To make H-size meet standard |
| | 5 | HIT | 35 | 50Hz V-size | STANDARD | D35 | To make V-size meet standard |
| | 6 | VP50 | 06 | 50Hz V-center | STANDARD | D35 | To make picture vertical center be in accordance with CRT center |
| | 7 | VLIN | 0E | 50Hz V-linearity | STANDARD | D35 | To make upper/dower part crosshatch height be equal |
| | 8 | VSC | 05 | 50Hz V S-correction | STANDARD | D35 | To make upper/middle/lower part crosshatch height be in equal |
| | 9 | HEHT | 04 | Horizontal high voltage compensation | STANDARD | D35/A12 | Fix |
| | 10 | VEHT | 04 | Vertical high voltage compensation | STANDARD | D35/A12 | Fix |
| | 11 | TNTC | 40 | NTSC tint center value setting | Contrast 100 Tint 100 brightness70 color70 | A7 | Fix |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 12 | TNTN | 00 | NTSC tint minimum value setting | Contrast 100 Tint 0 brightness70 color 70 | A7 | fix |
| | 13 | SCOL | 02 | Sub-color adjustment | STANDARD | A7 | Fix |
| | 14 | SCNT | 07 | Sub-brightness adjustment | STANDARD | Gray scale | Fix |
| | 15 | ASSH | 00 | Non-symmetry sharpness | | | Fix |
| 1 | 16 | ABL | 23 | ABL control (refer to appendix 2 for details) | SPORTS | A7 | Fix |
| | 17 | VSS | 02 | 60Hz V S-correction | STANDARD | A12 | To make upper/middle/lower part crosshatch height be equal. |
| | 18 | VLIS | FE | 60Hz V-linearity | STANDARD | A12 | To make upper/lower part crosshatch height be equal |
| | 19 | VP60 | 02 | 60Hz V-center | STANDARD | A12 | To make picture vertical center be in accordance with CRT center. |
| | 20 | HITS | 03 | 60Hz V-size | STANDARD | A12 | To make V-size meet standard |
| 2 | 21 | G CUT | 66 | Dark area white balance | | Black/white balance signal or A7 | To make picture dark area obtain standard white color. |
| | 22 | B CUT | 6C | | | | |
| | 23 | G DRV | 45 | Bright area white balance | SPORTS | Black/white balance signal or A7 | To make picture bright area obtain standard white color. |
| | 24 | B DRV | 4D | | | | |
| | 25 | R CUT | 60 | Dark area white balance | | Black/white balance signal or A7 | To make picture dark area obtain standard white color. |
| | 26 | CNTX | 3D | Contrast maximum value setting | SPORTS | Gray scale | Fix |
| | 27 | CNTC | 36 | Contrast center value setting | Contrast 50 | Gray scale | Fix |
| | 28 | CNTN | 22 | Contrast minimum value setting | Contrast0 color 0 brightness50 | Gray scale | Fix |
| | 29 | BRTX | 3D | Brightness maximum value setting | Contrast50 color 0 brightness100 | A7 | Fix |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 30 | BRTC | 36 | Brightness center value setting | contrast0<br>color 0<br>brightness50 | A7 | Refer to adjustment methods |
| | 31 | OSD | 17 | OSD H-position setting | | Any TV signal and display MENU screen | The character be in screen center. |
| | 32 | COLX | 70 | Color maximum value setting | SPORTS | A7 | Fix |
| | 33 | COLC | 3B | Color center value setting (NTSC) | STANDARD | A7 | Fix |
| | 34 | COLP | 20 | Color center value setting (PAL) | STANDARD | AV（PAL） | Fix |
| | 35 | COLN | 00 | Color minimum value setting | Contrast 100<br>color 0<br>brightness50 | A7 | To make picture without color |
| | 36 | TNTX | 6F | NTSC tint maximum value setting | Contrast 100<br>color 70<br>brightness70<br>tint 0 | A7 | Fix |
| | 37 | BRTN | 20 | Brightness minimum value setting | Contrast 0<br>color 0<br>brightness0 | A7 | Refer to adjustment method |
| | 38 | BRTS | 24 | Sub-brightness | contrast0<br>color 0<br>brightness50 | A7 | Refer to adjustment method |
| | 39 | V100 | E0 | VOL-100% volume setting | VOL-100% | Mono signal | Refer to adjustment method |
| | 40 | RAGC | 2A | RF AGC | STANDARD | A7 | Refer to adjustment method |
| 3 | 41 | DPC | 0C | 50Hz pincushion correction | STANDARD | D35 | To correct picture E/W pincushion |
| | 42 | KEY | 1B | 50Hz pincushion correction | STANDARD | D35 | To correct picture trapezoid |
| | 43 | DEF | 01 | Interlace scan setting 01 | | | Fix |
| | 44 | FLG 0 | 52 | Refer to Appendix 2 for details | | | Fix |
| | 45 | FLG 1 | E5 | Refer to Appendix 2 for details | | | Fix |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 46 | STBY | 00 | Refer to Appendix 2 for details | | | Fix |
| | 47 | TNCD | 40 | Tint center (DVD) | | | Fix |
| | 48 | VBLK | 00 | Refer to Appendix 2 for details | | | Fix |
| | 49 | MOD | 03 | Refer to Appendix 2 for details | | | Fix |
| | 50 | UCOM | 80 | Refer to Appendix 2 for details | | | Fix |
| 3 | 51 | MOD3 | 80 | Refer to Appendix 2 for details | | | Fix |
| | 52 | OPT | 17 | Refer to Appendix 2 for details | | | Fix |
| | 53 | OPTM1 | B2 | Refer to Appendix 2 for details | | | Fix |
| | 54 | OPTM2 | 65 | Refer to Appendix 2 for details | | | Fix |
| | 55 | TUNR | 02 | Tuner select | | | Fix |
| | 56 | CNRT | 1D | Top edge/corner correction | STANDARD | D35/A12 | To correct top edge and corner vertical line |
| | 57 | CNRT | 15 | Bottom edge/corner correction | STANDARD | D35/A12 | To correct bottom edge and corner vertical line |
| | 58 | KEYS | 01 | 60Hz trapezoid correction | STANDARD | A12 | To correct picture trapezoid |
| | 59 | DPCS | 00 | 60Hz pincushion correction | STANDARD | A12 | To correct picture E/W pincushion |
| 4 | 60 | ST3 | 1F | Sub-sharpness center value when input NTSC3.58 TV signal | STANDARD | A12 | Fix |
| | 61 | SV3 | 30 | Sub-sharpness center value when input NTSC3.58 AV signal | STANDARD | AV-N3.58 | Fix |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 62 | SV4 | 30 | Sub-sharpness center value when input non NTSC3.58 AV signal. | STANDARD | AV-N4.43 | Fix |
| | 63 | SVD | 30 | Sub-sharpness center value when in DVD input | STANDARD | DVD | Fix |
| | 64 | SHPX | 1A | Sharpness maximum value setting | Sharpness 100 | A12 | Fix |
| | 65 | SHPN | 1D | Sharpness minimum value setting | Sharpness 0 | A12 | Fix |
| | 66 | TXCX | 1F | DVD sub-color maximum value | SPORTS | DVD | Fix |
| | 67 | RGCN | 1F | DVD sub-color minimum value | STANDARD | DVD | Fix |
| | 68 | DCBS | 22 | | | | Fix |
| | 69 | CLTM | 0F | Refer to appendix 2 for details | STANDARD | A12 | Fix |
| | 70 | CLVO | 4F | Refer to appendix 2 for details | STANDARD | AV | Fix |
| | 71 | CLVD | 58 | Refer to appendix 2 for details | STANDARD | DVD | Fix |
| | 72 | CCD OSD | 16 | CCD H-position | | Display CCD caption | CCD character be in screen center |
| | 73 | CCD OSDH | 55 | CCD OSD oscillating frequency | | | Fix |
| | 74 | HAFC | 05 | AFC gain | | | Fix |
| | 75 | VCEN | 00 | IC output vertical signal center | | | Fix |
| | 76 | NSHP | 10 | Noise reducing degree | STANDARD | | Fix |
| | 77 | SYCT | 08 | (TEST) | | | Fix |
| | 78 | NOIS | 01 | (TEST) | | | Fix |
| | 79 | ONTM | 00 | POWER ON MUTE TIMER | | | Fix |
| 5 | 80 | V25 | D0 | Volume setting in VOL-25% | VOL-25 | MONO signal | Fix |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 81 | V50 | E0 | Volume setting in VOL-50% | VOL-50 | MONO signal | Fix |
| | 82 | OSDF | 55 | OSD oscillating frequency | | | Fix |
| | 83 | SUR 1 | 00 | Surround sound data at Sound register 1 | | | Fix |
| | 84 | BASC | 30 | Bass center value setting | VOL-50 | Sound sweep frequency signal | Fix |
| | 85 | BASX | 40 | Bass maximum value setting | VOL-50 | | Fix |
| | 86 | TREC | 39 | Treble center value setting | VOL-50 | | Fix |
| | 87 | BALC | 32 | Balance center value setting | VOL-50 | | Fix |
| | 88 | WOFC | 3D | Woofer center value setting | | | Fix |
| | 89 | BAS 1 | 32 | Bass data at Sound Register 1 | VOL-50 | | Fix |
| | 90 | BAS 2 | 5A | Bass data at Sound Register 2 | VOL-50 | | Fix |
| | 91 | TRB 1 | 32 | Treble data at Sound Register 1 | VOL-50 | | Fix |
| 5 | 92 | TRB 2 | 28 | Treble data at Sound Register2 | VOL-50 | | Fix |
| | 93 | WCTL | 30 | Woofer control | | | Fix |
| | 94 | WON 1 | 00 | “Woofer on” at Sound Register 1 | | | Fix |

Note 1: firstly adjust PAL signal (D35), then adjust NTSC (A12), then recheck PAL signal (D35), please prior to guarantee NTSC raster.

Note 2: when check PAL color, the inputting signal should be AV signal.

## Appendix 2 factory adjustment menu remarks

| | | | | |
|---|---|---|---|---|
| FLG0 | BIT0 | Over Mod Switch | 0:normal | 1:POF over-modulation switch is connected |
| | BIT1 | AFT window | 0:out of AFT window | 1:in the AFT window |
| | BIT2 | Buzz reduction | 0:Nyquist Buzz cancel on | 1:off |
| | BIT3 | Orthogonal detection gain | 0:ont use | 1:not use |
| | BIT4 | Local SECAM | 0:not use | 1:not use |

| | | | | |
|---|---|---|---|---|
| | BIT5 | 5.65MHz SIF | 0:not use | 1:not use |
| | BIT6 | 5.74MHz SIF | 0:not use | 1:not use |
| | BIT7 | Frequency select no VCO adjustment | 0:have VCO | 1:without VCO |
| FLG1 | | CW on/off | 0:off | 1:on, CW ouput from IC pin26# |
| | BIT1 | Y out on | 0:not use | 1:not use |
| | BIT2 | MIZ gain | 0:SIF 1MHz convert gain, low gain | 1:high gain |
| | BIT5 | C trap pass(test) | 0:not use | 1:not use |
| | BIT6 | Detection NTSC3.58 | 0:not use | 1:not use |
| | BIT7 | teletext | 0:not use | 1:not use |
| MOD | BIT0 | AKB CUT OFF sensitivity gain | 00:X9.75<br>01:X10 | 10:X10.25<br>11:X10.50 |
| | BIT1 | | | |
| | BIT2 | Cut off range | 0:-0.65 to +6.5 | 1:-0.65 to +0.85 |
| UCOM | BIT0 | inner ADC | 00:GND | 10:B out |
| | BIT1 | | 01:R out | 11:Monito RF AGC via ADC |
| | BIT2 | rest pattern from ucom | 0:normal | 1: |
| | BIT3 | use ucom sync switch | 0:normal | 1:use ucom sync |
| | BIT4 | Sync to ucom | 0:no use | 1:no use |
| | BIT5 | v-switch out ucom | 0:no use | 1:no use |
| | BIT7 | OSD HD input polarity | 0:no use | 1:no use |
| MOD3 | BIT4-0 | VIDEO mute time | Mute time=data X 8ms | |
| | BIT7 | VIDEO mute type | 0:Y mute | 1:RGB out cut off DC |
| OPT | BIT0 | FBB-MUTE | 0: | 1:when blue background off, not do MUTE |
| | BIT1 | FBB-EXMUTE | 0: | 1: when blue background off, not do EXT-MUTE |
| | BIT2 | FYMUTE USE | 0: | 1:when switching channels, use Y-MUTE |
| | BIT3 | Sound gain SW | 0:50Hz | 1:500mV RMS-25kHz/dev |
| | BIT4 | Vertical frequency force | 0:50Hz | 1:60Hz |
| | BIT5 | Sync detection | 0:exernal | 1:internal |
| | BIT7 | Sync distinguish way | 0: | 1:gain noise detection |
| OPTM1 | BIT0 | FJP-SVM USE | 0:SVM out | 1:monitor out |
| | BIT1 | AV select | 0:AV1-AV2(DVD)-AV3 | 1:AV1-AV2-DVD |
| | BIT2 | FJP-GAME | 0:without game | 1:have game |
| | BIT3 | On-timer indication | 0:low level, on-timer on | 1:high level, on-timer on |
| | BIT6 | FJP-M-PAL | 0:others | 1:only PAL-M |
| | BIT7 | FJP-stereo | 0:without stereo | 1:have stereo |
| OPTM2 | BIT0 | FJP-Y.U.V | 0:without Y.U.V | 1:have Y.U.V |
| | BIT1 | FJP-language | 0:English/French/Spanish | 1:English/Tradtional Chinese |
| | BIT2 | F52797-VAMP | 0:no gain | 1:6dB gain |
| | BIT4 | FJP-display button | 0;timer display OSD | 1:always display |
| | BIT5 | FJP-woofer | 0:without woofer | 1:have woofer |
| | BIT6 | FJP-AUTO | 0:AUTO2(35N,M-PAL,N-PAL) | 1:AUTO1(44P,35N,44N) |

| | | | | |
|---|---|---|---|---|
| CLTM (in TV mode) | BIT0 | Y delay (in TV mode) | 000:-40ns<br>001:0<br>010:40ns<br>011:80ns | 100:120ns<br>101:160ns<br>110:200ns<br>111:240ns |
| | BIT1 | | | |
| | BIT2 | | | |
| | BIT3 | NTSC matrix | 00:NTSC1(93°) | 10,11 for DVD |
| | BIT4 | | 01:NTSC2(108°) | |
| | BIT5 | C-GAMMA | 0:Chroma γ correction off | 1:Chroma correction on |
| | BIT6 | Color kill off | 0:normal | 1:color killer always off |
| | BIT7 | P/N ID | 0:P/N color killing sensitivity 1.2/1.5mVp-p | 1:6.6/6.4mVp-p |
| CLVO (in AV mode) | BIT0 | Y delay (in TV mode) | 000:-40ns<br>001:0<br>010:40ns<br>011:80ns | 100:120ns<br>101:160ns<br>110:200ns<br>111:240ns |
| | BIT1 | | | |
| | BIT2 | | | |
| | BIT3 | NTSC matrix | 00:NTSC1(93°) | 10,11 for DVD |
| | BIT4 | | 01:NTSC2(108°) | |
| | BIT5 | C-GAMMA | 0:Chroma γ correction off | 1:Chroma γ correction on |
| | BIT6 | Color kill off | 0:normal | 1:color killer always off |
| | BIT7 | P/N ID | 0:P/N color killing sensitivity 1.2/1.5mVp-p | 1:6.6/6.4mVp-p |
| CLVD (in DVD mode) | BIT0 | Y delay (in TV mode) | 000:-40ns<br>001:0<br>010:40ns<br>011:80ns | 100:120ns<br>101:160ns<br>110:200ns<br>111:240ns |
| | BIT1 | | | |
| | BIT2 | | | |
| | BIT3 | NTSC matrix | 00:NTSC1(93°) | 10,11 for DVD |
| | BIT4 | | 01:NTSC2(108°) | |
| | BIT5 | C-GAMMA | 0:Chroma γ correction off | 1:Chroma γ correction on |
| | BIT6 | Color kill off | 0:normal | 1:color killer always off |
| | BIT7 | P/N ID | 0:P/N color killing sensitivity 1.2/1.5mVp-p | 1:6.6/6.4mVp-p |
| NDHP | When NOISE REDUCE ON, sharpness register′s content = OSD sharpness value-NSHP value | | | |

# USA CHANNEL FREQUENCY TABLE (181 CH)

P IF=45.75 MHz
C IF=42.17MHz
S IF=41.25MHz
UNIT: MHz

| BAND | CHANNEL | P CARRIER | S CARRIER | LOCAL |
|---|---|---|---|---|
| VHF Low | 2 | 55.25 | 59.75 | 101 |
| | 3 | 61.25 | 65.75 | 107 |
| | 4 | 67.25 | 71.75 | 113 |
| | 5 | 77.25 | 81.75 | 123 |
| | 6 | 83.25 | 87.75 | 129 |
| | A-6 | 85.25 | 89.75 | 131 |
| | A-5 | 91.25 | 95.75 | 137 |
| | A-4 | 97.25 | 101.75 | 143 |
| | A-3 | 103.25 | 107.75 | 149 |
| | A-2 | 109.25 | 113.75 | 155 |
| | A-1 | 115.25 | 119.75 | 161 |
| | A | 121.25 | 125.75 | 167 |
| | B | 127.25 | 131.75 | 173 |
| VHF High | C | 133.25 | 137.75 | 179 |
| | D | 139.25 | 143.75 | 185 |
| | E | 145.25 | 149.75 | 191 |
| | F | 151.25 | 155.75 | 197 |
| | G | 157.25 | 161.75 | 203 |
| | H | 163.25 | 167.75 | 209 |
| | I | 169.25 | 173.75 | 215 |
| | 7 | 175.25 | 179.75 | 221 |
| | 8 | 181.25 | 185.75 | 227 |
| | 9 | 187.25 | 191.75 | 233 |
| | 10 | 193.25 | 197.75 | 239 |
| | 11 | 199.25 | 203.75 | 245 |
| | 12 | 205.25 | 209.75 | 251 |
| | 13 | 211.25 | 215.75 | 257 |
| | J | 217.25 | 221.75 | 263 |
| | K | 223.25 | 227.75 | 269 |
| | L | 229.25 | 233.75 | 275 |
| | M | 235.25 | 239.75 | 281 |
| | N | 241.25 | 245.75 | 287 |
| | O | 247.25 | 251.75 | 293 |
| | P | 253.25 | 257.75 | 299 |
| | Q | 259.25 | 263.75 | 305 |
| | R | 265.25 | 269.75 | 311 |
| | S | 271.25 | 275.75 | 317 |
| | T | 277.25 | 281.75 | 323 |
| | U | 283.25 | 287.75 | 329 |
| | V | 289.25 | 293.75 | 335 |
| | W | 295.25 | 299.75 | 341 |
| | W+1 | 301.25 | 305.75 | 347 |
| | W+2 | 307.25 | 311.75 | 353 |
| | W+3 | 313.25 | 317.75 | 359 |
| | W+4 | 319.25 | 323.75 | 365 |
| | W+5 | 325.25 | 329.75 | 371 |
| | W+6 | 331.25 | 335.75 | 377 |
| | W+7 | 337.25 | 341.75 | 383 |
| | W+8 | 343.25 | 347.75 | 389 |
| | W+9 | 349.25 | 353.75 | 395 |
| | W+10 | 355.25 | 359.75 | 401 |

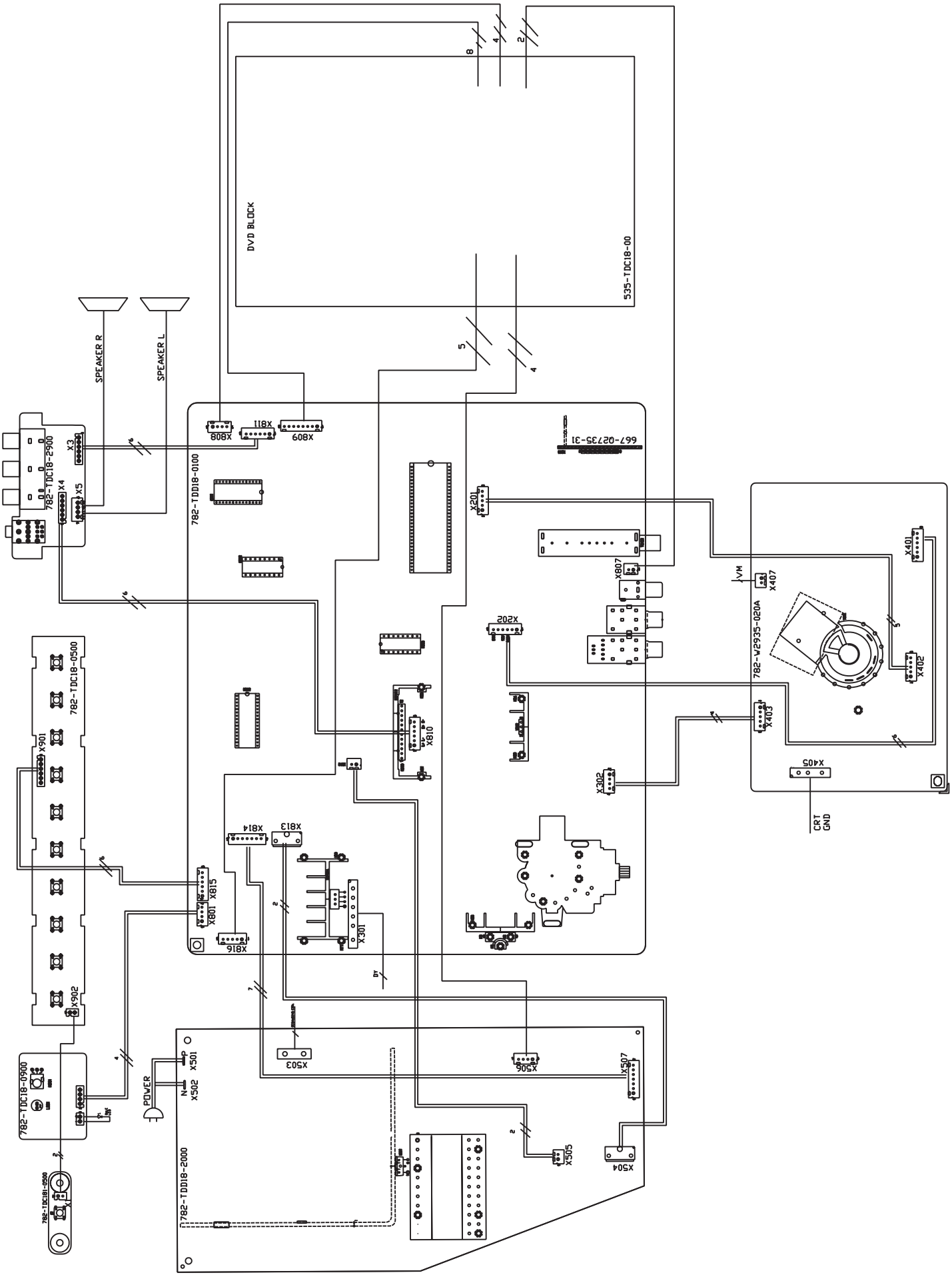
| BAND | CHANNEL | P CARRIER | S CARRIER | LOCAL |
|---|---|---|---|---|
| UHF | W+11 | 361.25 | 365.75 | 407 |
| | W+12 | 367.25 | 371.75 | 413 |
| | W+13 | 373.25 | 377.75 | 419 |
| | W+14 | 379.25 | 383.75 | 425 |
| | W+15 | 385.25 | 389.75 | 431 |
| | W+16 | 391.25 | 395.75 | 437 |
| | W+17 | 397.25 | 401.75 | 443 |
| | W+18 | 403.25 | 407.75 | 449 |
| | W+19 | 409.25 | 413.75 | 455 |
| | W+20 | 415.25 | 419.75 | 461 |
| | W+21 | 421.25 | 425.75 | 467 |
| | W+22 | 427.25 | 431.75 | 473 |
| | W+23 | 433.25 | 437.75 | 479 |
| | W+24 | 439.25 | 443.75 | 485 |
| | W+25 | 445.25 | 449.75 | 491 |
| | W+26 | 451.25 | 455.75 | 497 |
| | W+27 | 457.25 | 461.75 | 503 |
| | W+28 | 463.25 | 467.75 | 509 |
| | W+29 | 469.25 | 473.75 | 515 |
| | 14 | 471.25 | 475.75 | 517 |
| | 15 | 477.25 | 481.75 | 523 |
| | 16 | 483.25 | 487.75 | 529 |
| | 17 | 489.25 | 493.75 | 535 |
| | 18 | 495.25 | 499.75 | 541 |
| | 19 | 501.25 | 505.75 | 547 |
| | 20 | 507.25 | 511.75 | 553 |
| | 21 | 513.25 | 517.75 | 559 |
| | 22 | 519.25 | 523.75 | 565 |
| | 23 | 525.25 | 529.75 | 571 |
| | 24 | 531.25 | 535.75 | 577 |
| | 25 | 537.25 | 541.75 | 583 |
| | 26 | 543.25 | 547.75 | 589 |
| | 27 | 549.25 | 553.75 | 595 |
| | 28 | 555.25 | 559.75 | 601 |
| | 29 | 561.25 | 565.75 | 607 |
| | 30 | 567.25 | 571.75 | 613 |
| | 31 | 573.25 | 577.75 | 619 |
| | 32 | 579.25 | 583.75 | 625 |
| | 33 | 585.25 | 589.75 | 631 |
| | 34 | 591.25 | 595.75 | 637 |
| | 35 | 597.25 | 601.75 | 643 |
| | 36 | 603.25 | 607.75 | 649 |
| | 37 | 609.25 | 613.75 | 655 |
| | 38 | 615.25 | 619.75 | 661 |
| | 39 | 621.25 | 625.75 | 667 |
| | 40 | 627.25 | 631.75 | 673 |
| | 41 | 633.25 | 637.75 | 679 |
| | 42 | 639.25 | 643.75 | 685 |
| | 43 | 645.25 | 649.75 | 691 |
| | 44 | 651.25 | 655.75 | 697 |
| | 45 | 657.25 | 661.75 | 703 |

## USA CHANNEL FREQUENCY TABLE (181 CH)

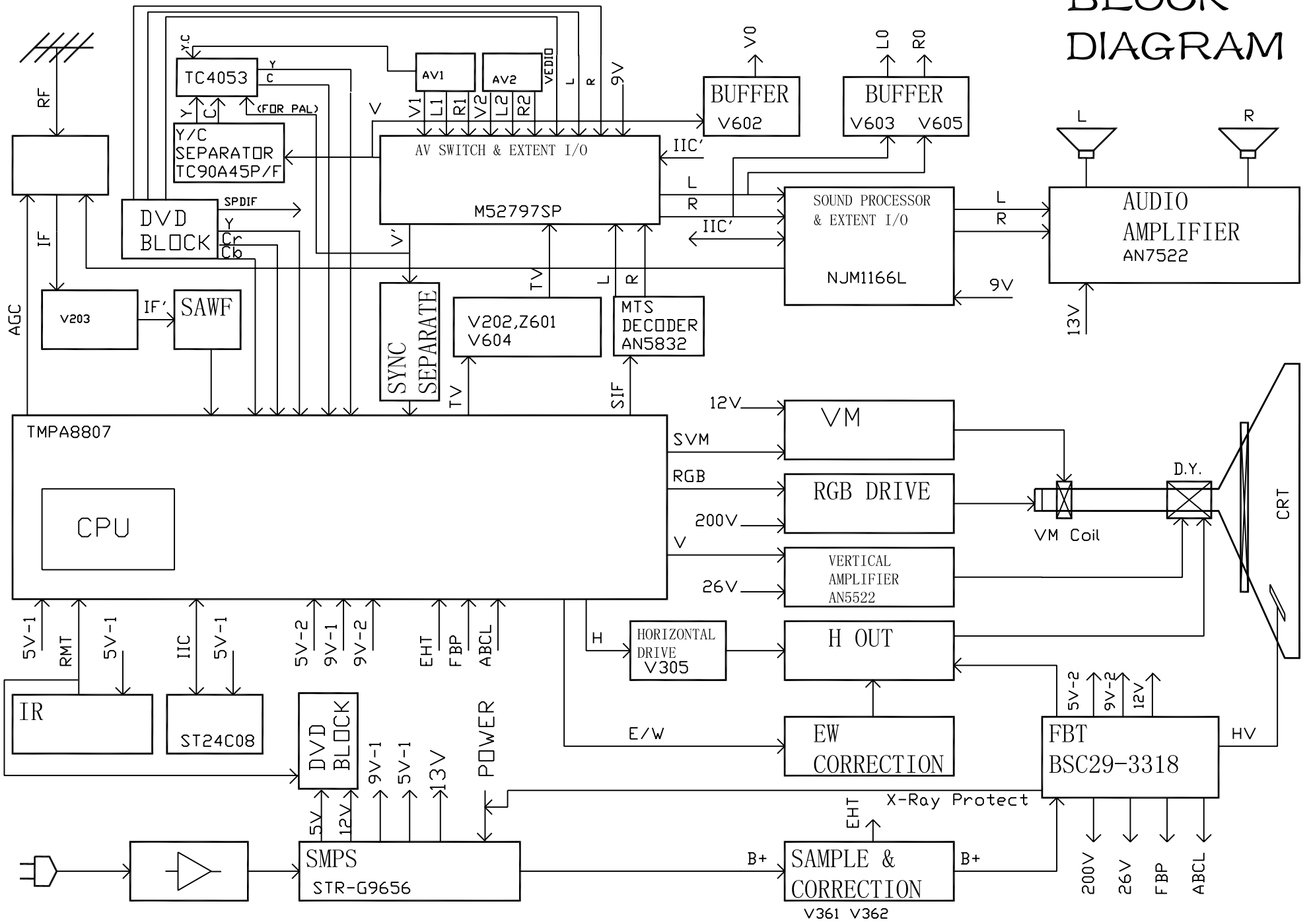
P IF=45.75 MHz
C IF=42.17MHz
S IF=41.25MHz
UNIT: MHz

| BAND | CHANNEL | P CARRIER | S CARRIER | LOCAL |
|---|---|---|---|---|
| UHF | 46 | 663.25 | 667.75 | 709 |
| | 47 | 669.25 | 673.75 | 715 |
| | 48 | 675.25 | 679.75 | 721 |
| | 49 | 681.25 | 685.75 | 727 |
| | 50 | 687.25 | 691.75 | 733 |
| | 51 | 693.25 | 697.75 | 739 |
| | 52 | 699.25 | 703.75 | 745 |
| | 53 | 705.25 | 709.75 | 751 |
| | 54 | 711.25 | 715.75 | 757 |
| | 55 | 717.25 | 721.75 | 763 |
| | 56 | 723.25 | 727.75 | 769 |
| | 57 | 729.25 | 733.75 | 775 |
| | 58 | 735.25 | 739.75 | 781 |
| | 59 | 741.25 | 745.75 | 787 |
| | 60 | 747.25 | 751.75 | 793 |
| | 61 | 753.25 | 757.75 | 799 |
| | 62 | 759.25 | 763.75 | 805 |
| | 63 | 765.25 | 769.75 | 811 |
| | 64 | 771.25 | 775.75 | 817 |
| | 65 | 777.25 | 781.75 | 823 |
| | 66 | 783.25 | 787.75 | 829 |
| | 67 | 789.25 | 793.75 | 835 |
| | 68 | 795.25 | 799.75 | 841 |
| | 69 | 801.25 | 805.75 | 847 |

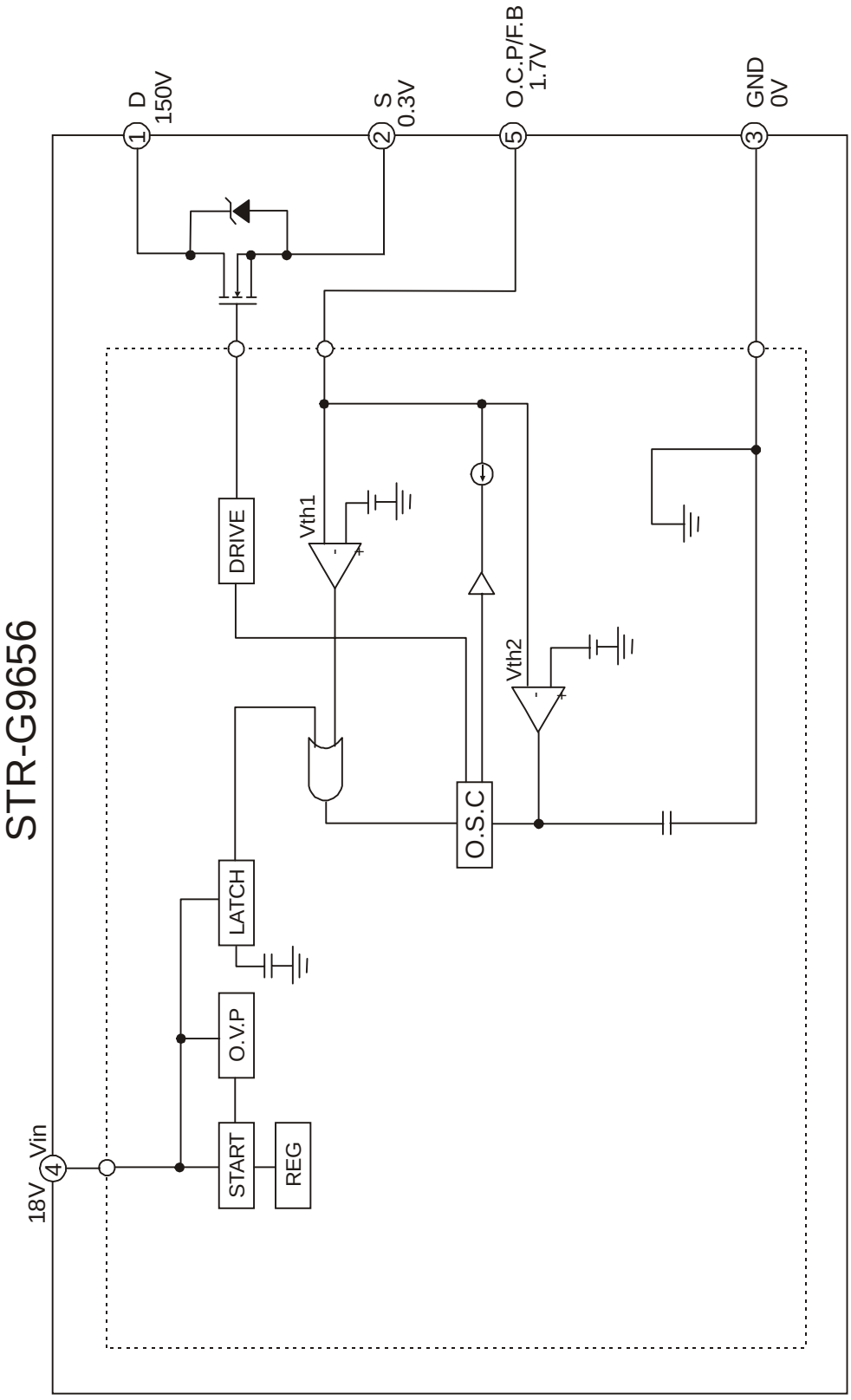
# WIRING DIAGRAM

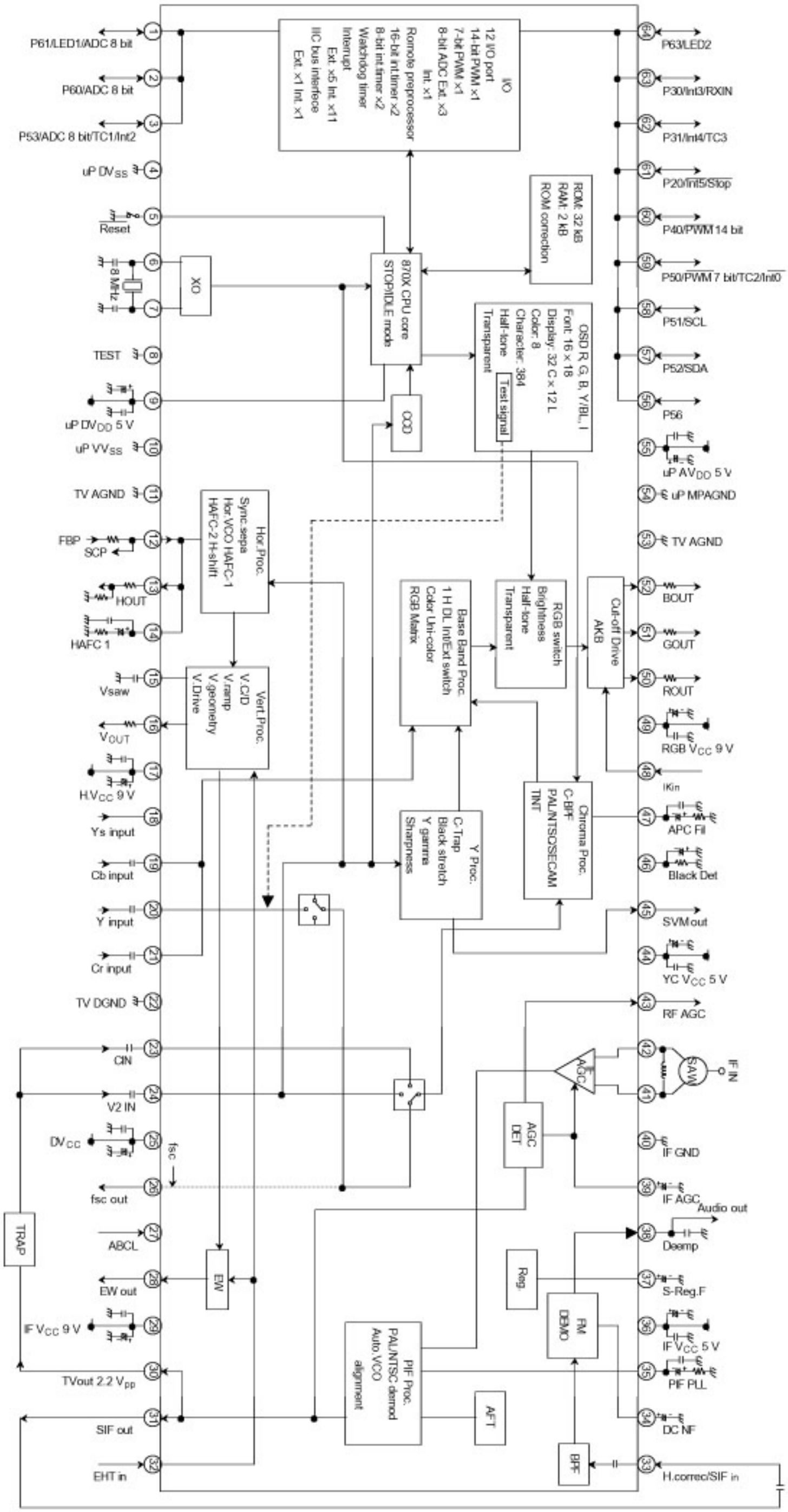


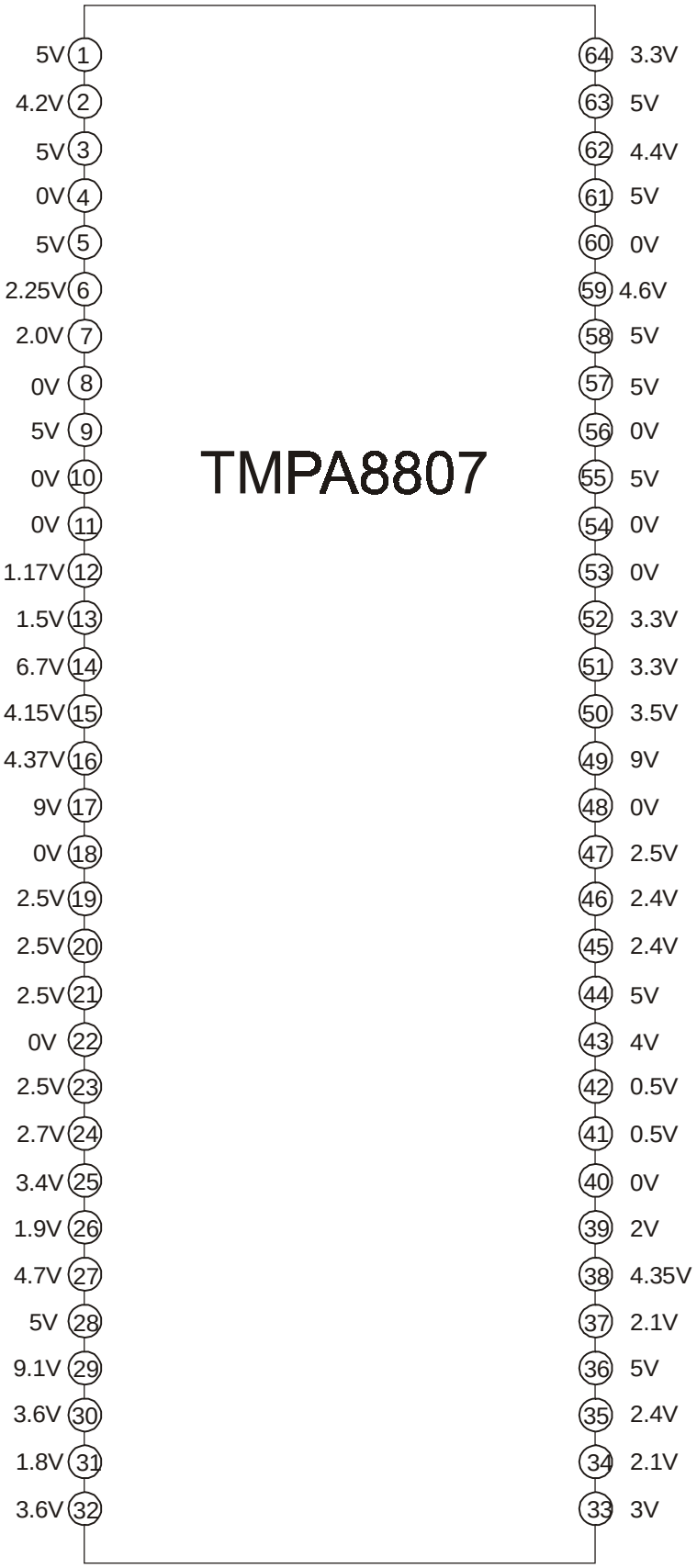
# BLOCK DIAGRAM

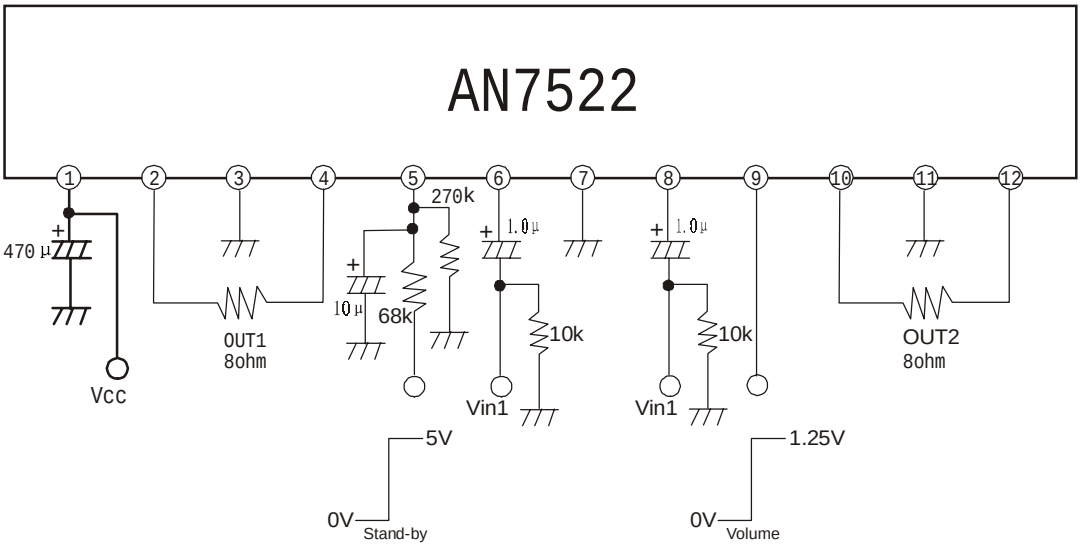


# IC BLOCK DIAGRAM

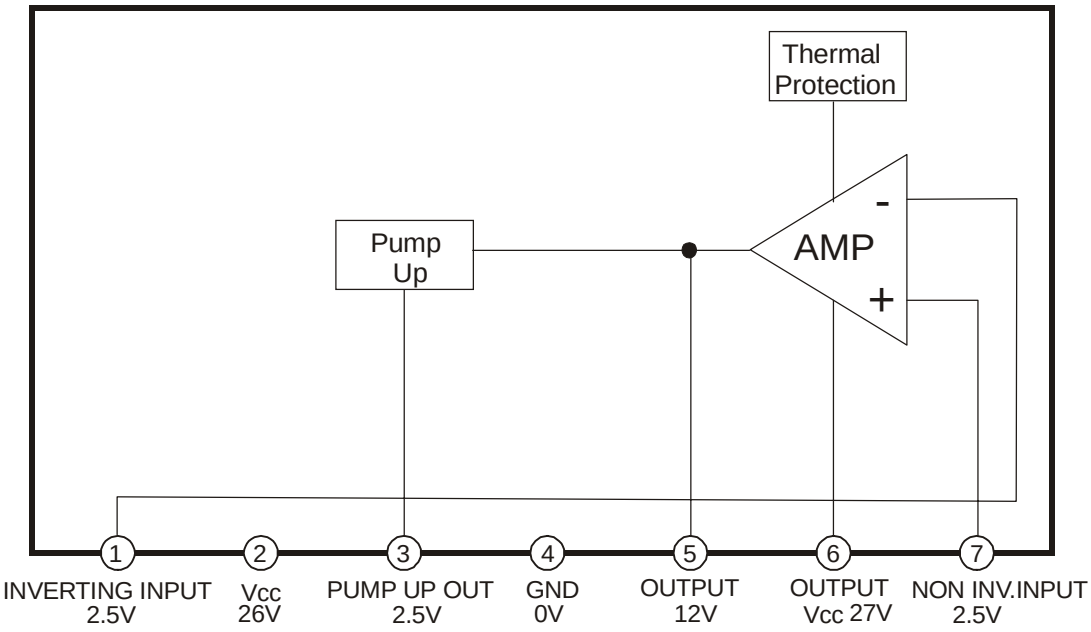


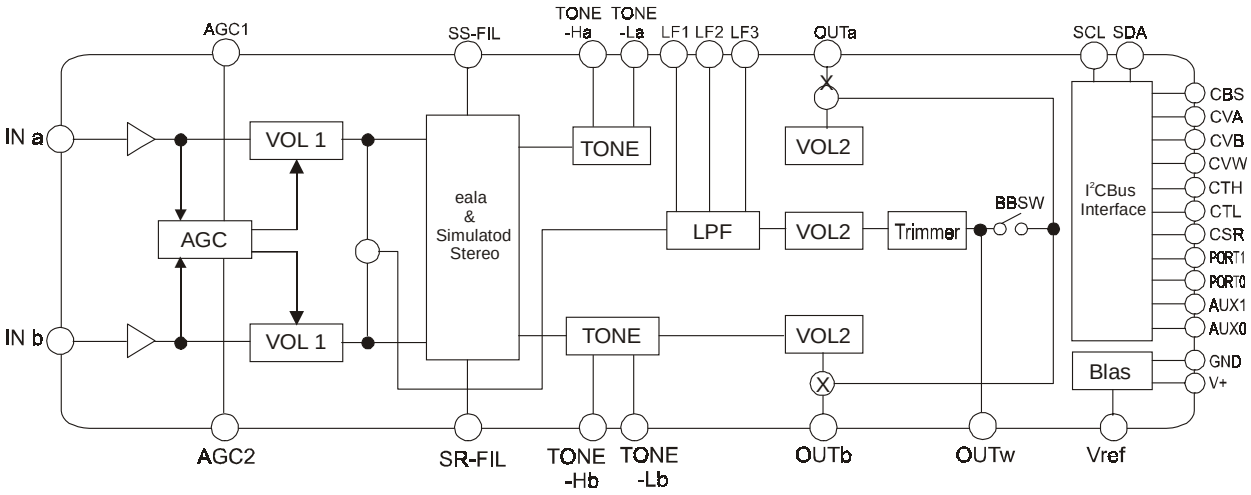

P61/LED1/ADC 8 bit
P60/ADC 8 bit
P53/ADC 8 bit/TC1/Int2
uP DVSS
Reset
8 MHz
XO
TEST
uP DVDD 5 V
uP VVSS
TV AGND
FBP
SCP
HOUT
HAFC 1
Vsaw
VOUT
H.VCC 9 V
Ys input
Cb input
Y input
Cr input
TV DGND
CIN
V2 IN
DVCC
fsc out
TRAP
ABCL
EW out
IF VCC 9 V
TVout 2.2 Vpp
SIF out
EHT in
I/O
12 I/O port
14-bit PWM x1
7-bit PWM x1
8-bit ADC Ext. x3
Int. x1
Remote preprocessor
16-bit int.timer x2
8-bit int.timer x2
Watchdog timer
Interrupt
Ext. x5 Int. x11
IIC bus interface
Ext. x1 Int. x1
ROM: 32 kB
RAM: 2 kB
ROM correction
870X CPU core
STOP/IDLE mode
OSD R, G, B, Y/BL, I
Font: 16 x 18
Display: 32 C x 12 L
Color: 8
Character: 384
Half-tone
Transparent
Test signal
OSD
Hor.Proc.
Sync.sepa
Hor.VCO HAFC-1
HAFC-2 H-shift
Vert.Proc.
V.C/D
V.ramp
V.geometry
V.Drive
Base Band Proc.
1 H DL Int/Ext switch
Color Uni-color
RGB Matrix
RGB switch
Brightness
Half-tone
Transparent
Cut-off Drive
AKB
Y Proc.
C-Trap
Black stretch
Y gamma
Sharpness
Chroma Proc.
C-BPF
PAL/NTSC/SECAM
TINT
EW
TRAP
PIF Proc.
PAL/NTSC demod
Auto.VCO
alignment
AFT
AGC DET
AGC
SAW
IF IN
IF GND
IF AGC
Audio out
Deemp
Reg.
S-Reg.F
FM DEMO
IF VCC 5 V
PIF PLL
DC NF
BPF
H.correc/SIF in
fsc
P63/LED2
P30/Int3/RXIN
P31/Int4/TC3
P20/Int5/Stop
P40/PWM 14 bit
P50/PWM 7 bit/TC2/Int0
P51/SCL
P52/SDA
P56
uP AVDD 5 V
uP MPAGND
TV AGND
BOUT
GOUT
ROUT
RGB VCC 9 V
IKin
APC Fil
Black Det
SVM out
YC VCC 5 V
RF AGC


TMPA8807
5V 1
4.2V 2
5V 3
0V 4
5V 5
2.25V 6
2.0V 7
0V 8
5V 9
0V 10
0V 11
1.17V 12
1.5V 13
6.7V 14
4.15V 15
4.37V 16
9V 17
0V 18
2.5V 19
2.5V 20
2.5V 21
0V 22
2.5V 23
2.7V 24
3.4V 25
1.9V 26
4.7V 27
5V 28
9.1V 29
3.6V 30
1.8V 31
3.6V 32
64 3.3V
63 5V
62 4.4V
61 5V
60 0V
59 4.6V
58 5V
57 5V
56 0V
55 5V
54 0V
53 0V
52 3.3V
51 3.3V
50 3.5V
49 9V
48 0V
47 2.5V
46 2.4V
45 2.4V
44 5V
43 4V
42 0.5V
41 0.5V
40 0V
39 2V
38 4.35V
37 2.1V
36 5V
35 2.4V
34 2.1V
33 3V

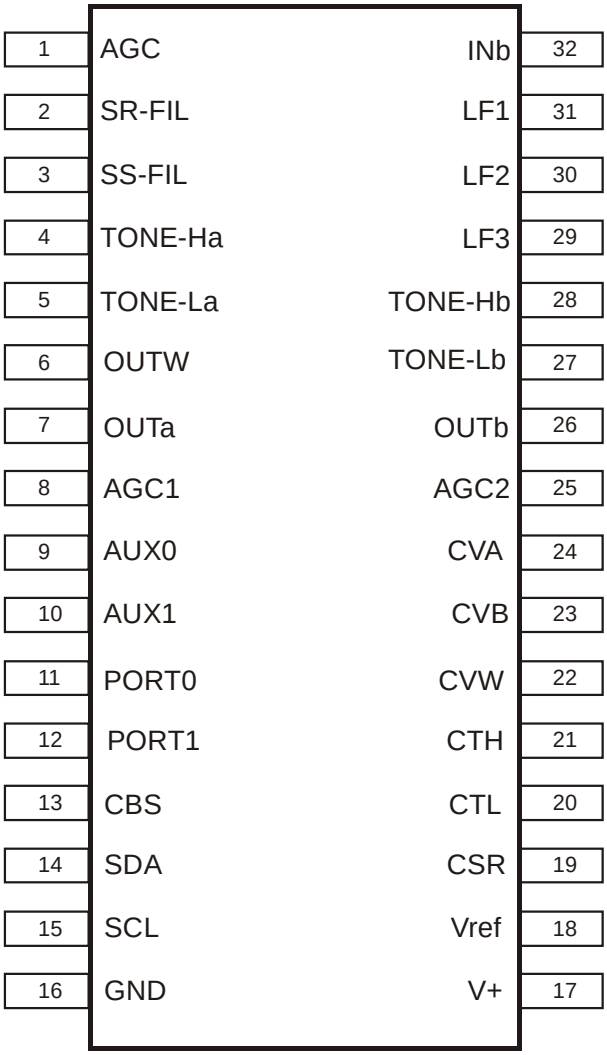


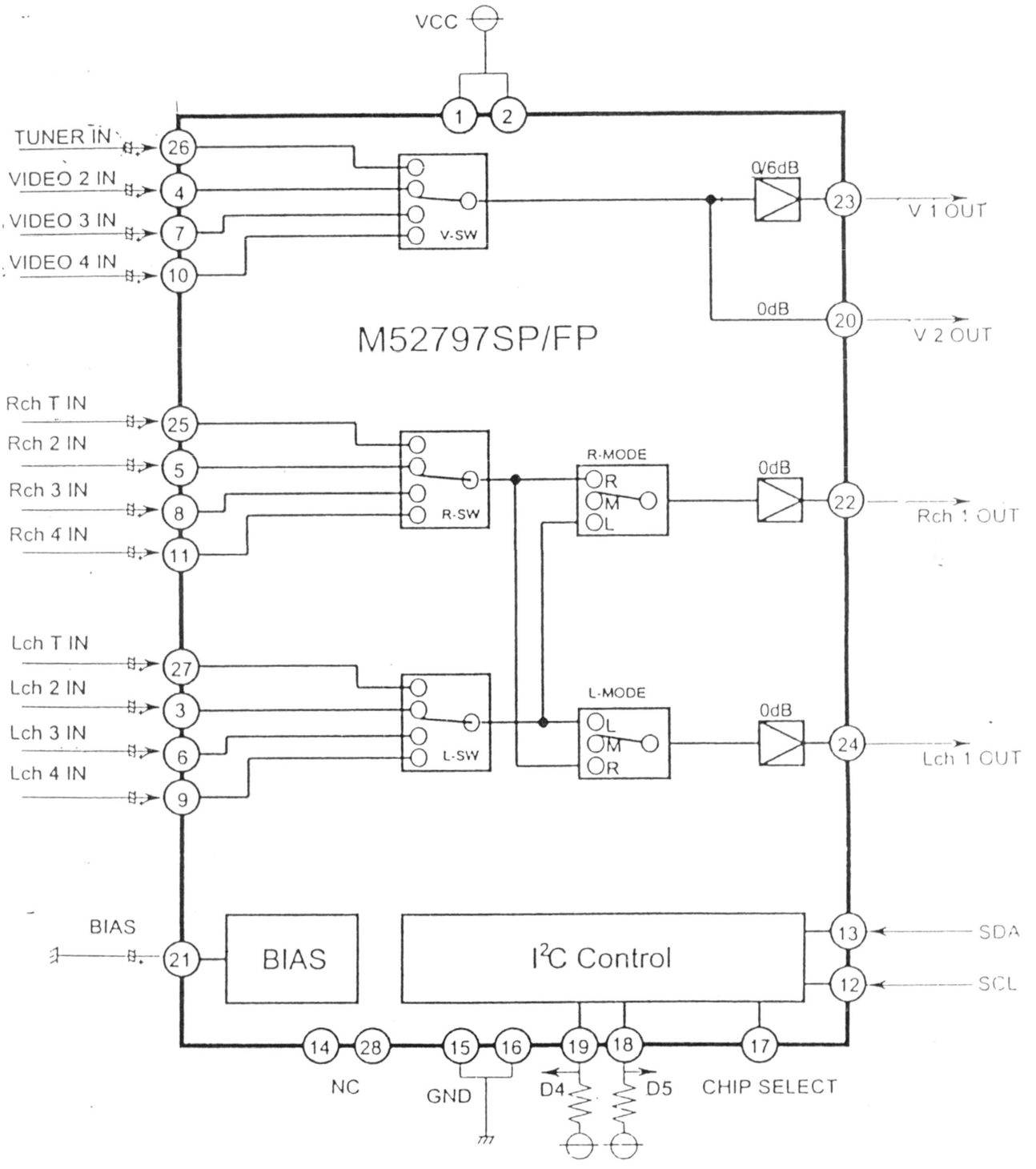

Note: If the standby pin is open or 0V, the IC is on standby state.
The IC is in the state of volume minimum if the Volume pin is ground.
The IC is in the state of volume maximum if the Volume pin is open.

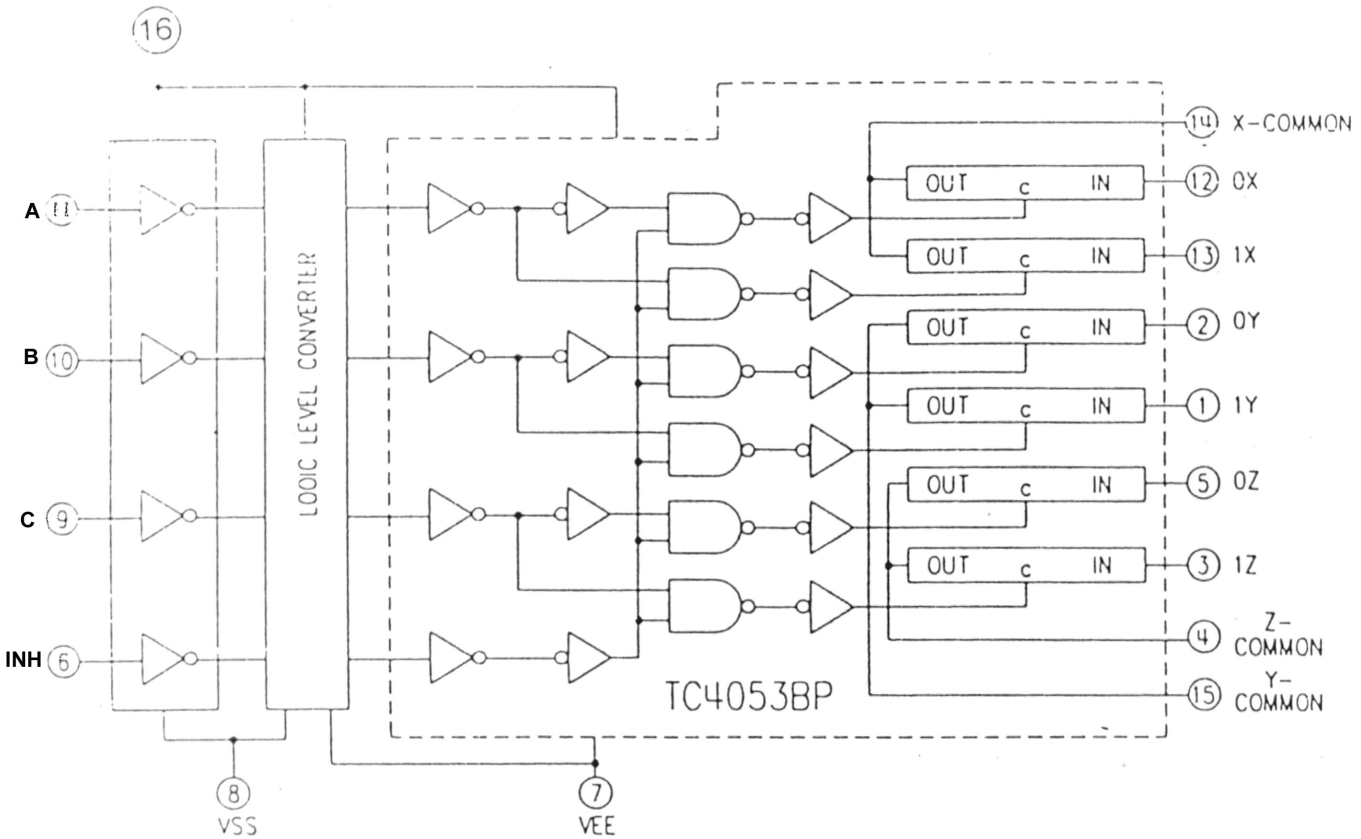


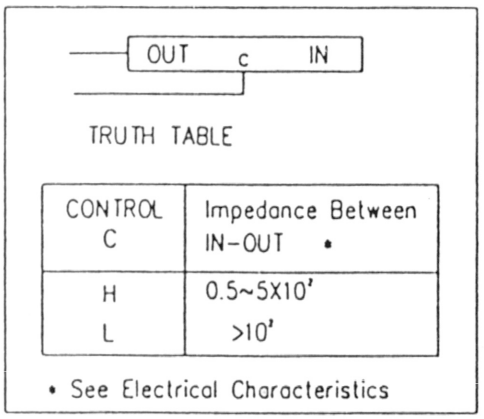

AGC1
SS-FIL
TONE -Ha
TONE -La
LF1 LF2 LF3
OUTa
SCL SDA
IN a
VOL 1
TONE
VOL2
CBS
CVA
CVB
CVW
CTH
CTL
CSR
PORT1
PORT0
AUX1
AUX0
GND
V+
AGC
eala & Simulatod Stereo
LPF
VOL2
Trimmer
BBSW
I²CBus Interface
IN b
VOL 1
TONE
VOL2
Blas
AGC2
SR-FIL
TONE -Hb
TONE -Lb
OUTb
OUTw
Vref

# NJW1166


1 AGC
2 SR-FIL
3 SS-FIL
4 TONE-Ha
5 TONE-La
6 OUTW
7 OUTa
8 AGC1
9 AUX0
10 AUX1
11 PORT0
12 PORT1
13 CBS
14 SDA
15 SCL
16 GND
INb 32
LF1 31
LF2 30
LF3 29
TONE-Hb 28
TONE-Lb 27
OUTb 26
AGC2 25
CVA 24
CVB 23
CVW 22
CTH 21
CTL 20
CSR 19
Vref 18
V+ 17


VCC
1
2
TUNER IN
26
VIDEO 2 IN
4
VIDEO 3 IN
7
VIDEO 4 IN
10
V-SW
6dB
23
V 1 OUT
0dB
20
V 2 OUT
M52797SP/FP
Rch T IN
25
Rch 2 IN
5
Rch 3 IN
8
Rch 4 IN
11
R-SW
R-MODE
R
M
L
0dB
22
Rch 1 OUT
Lch T IN
27
Lch 2 IN
3
Lch 3 IN
6
Lch 4 IN
9
L-SW
L-MODE
L
M
R
0dB
24
Lch 1 OUT
BIAS
21
BIAS
I2C Control
13
SDA
12
SCL
14
28
15
16
19
18
17
NC
GND
D4
D5
CHIP SELECT



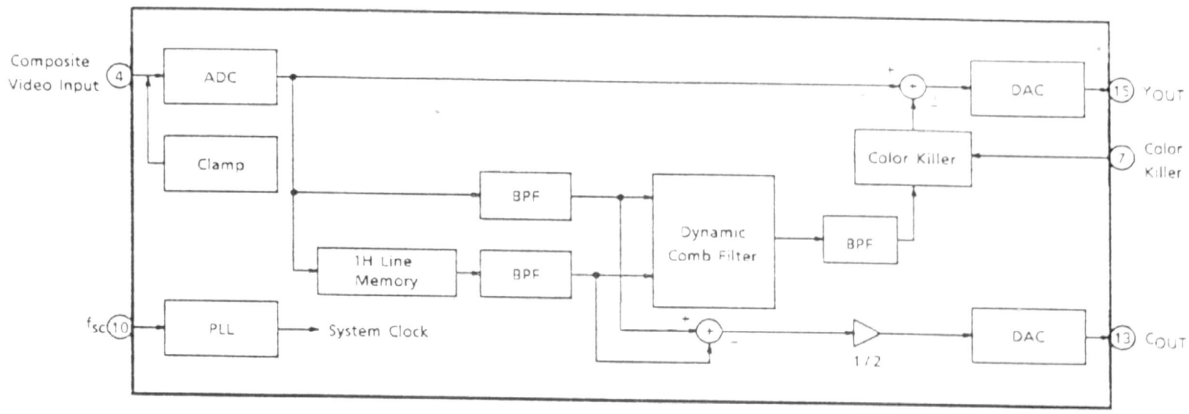




TRUTH TABLE

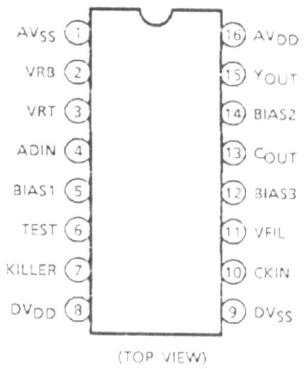
| CONTROL C | Impedance Between IN-OUT • |
|---|---|
| H | 0.5~5X10³ |
| L | >10⁷ |

• See Electrical Characteristics

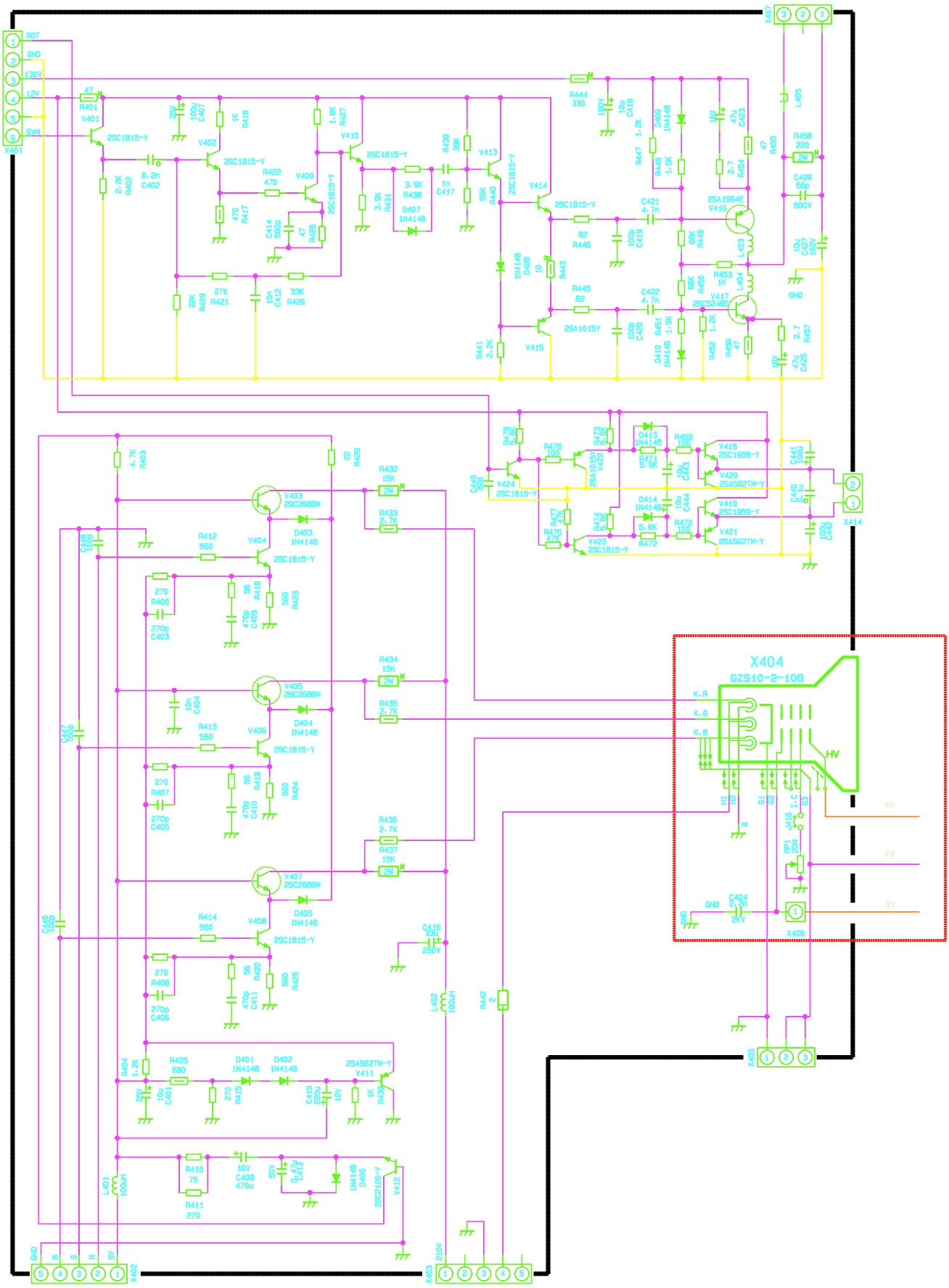
# TC90A45P/F

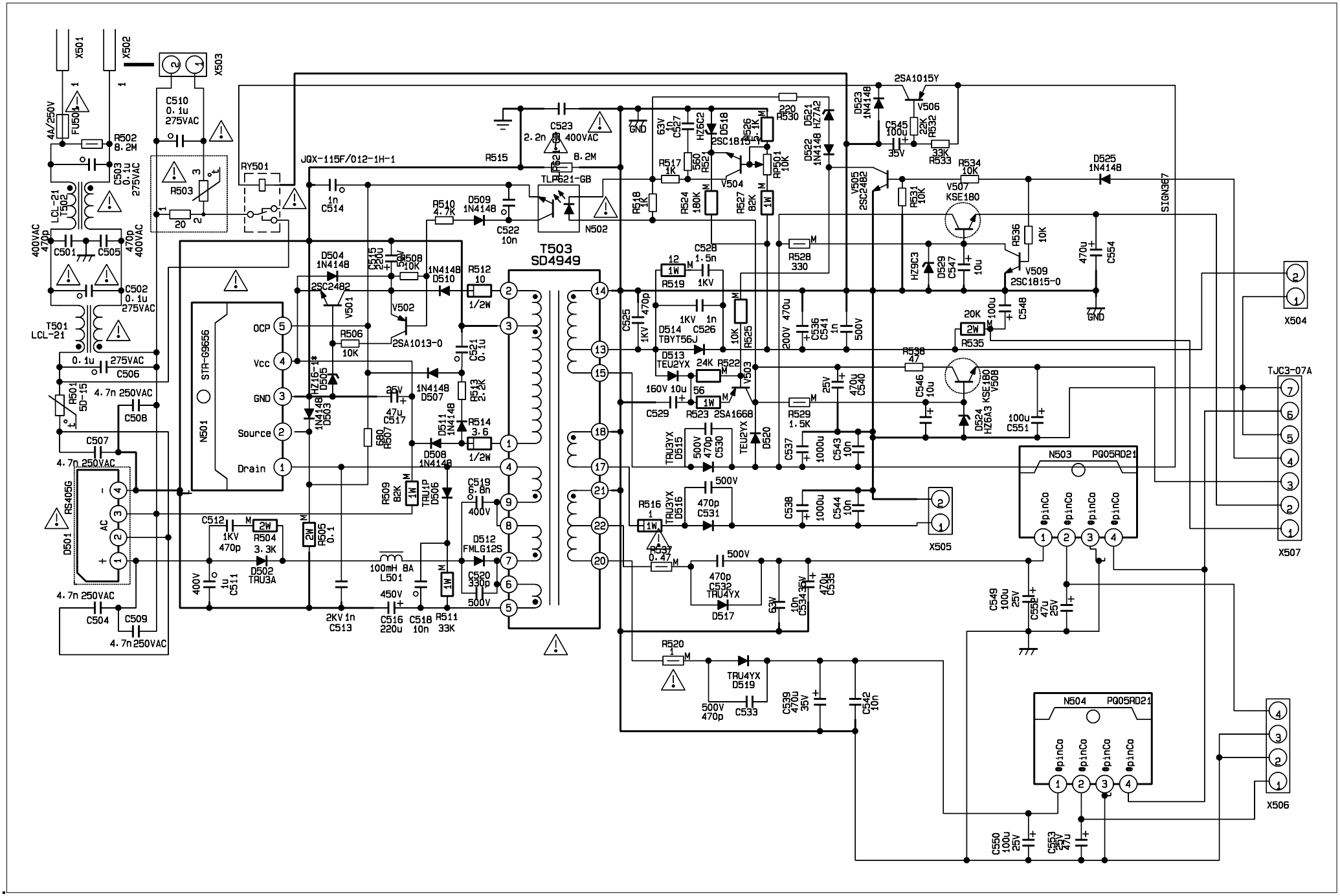


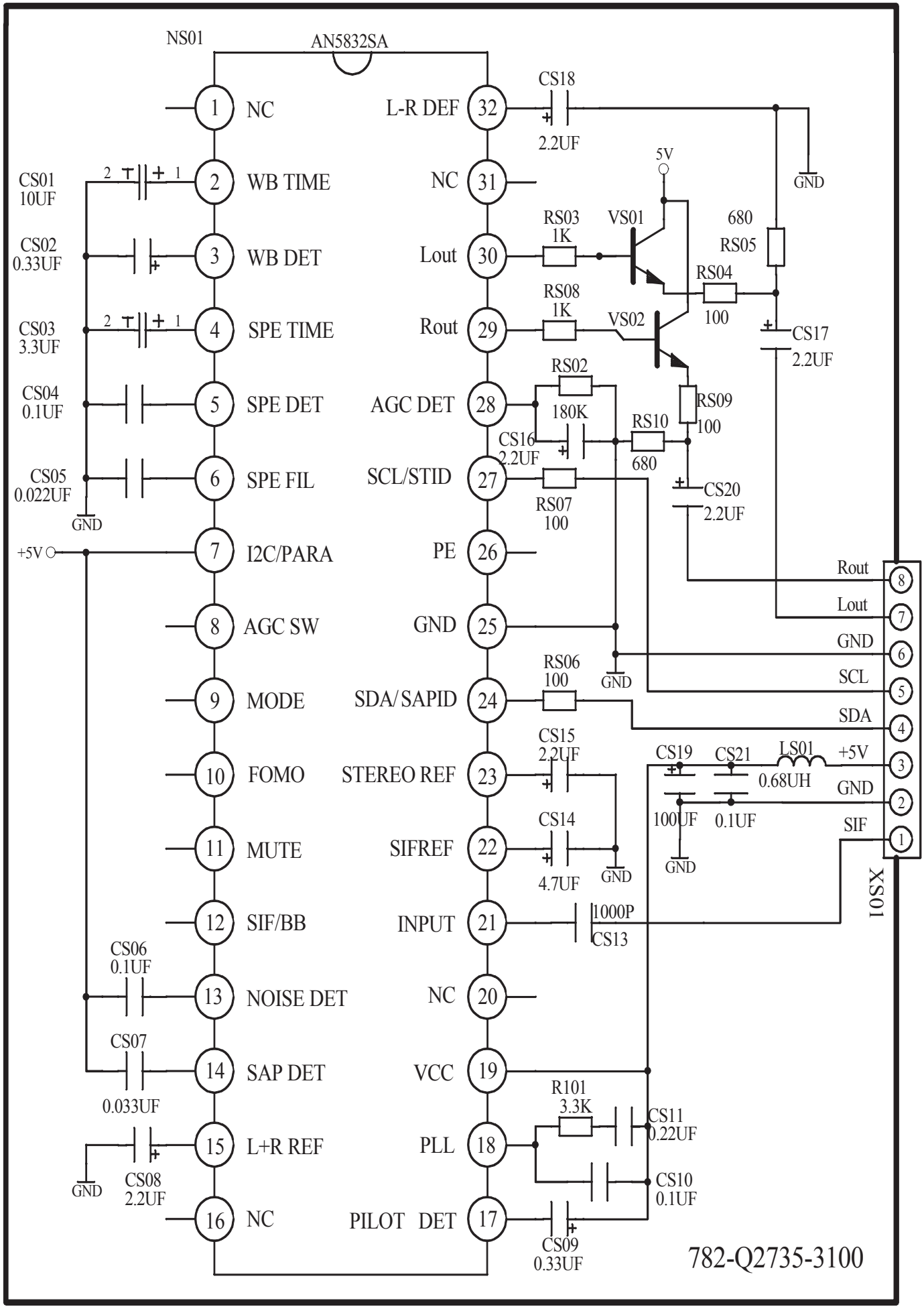

## TERMINAL CONNECTION DIAGRAM

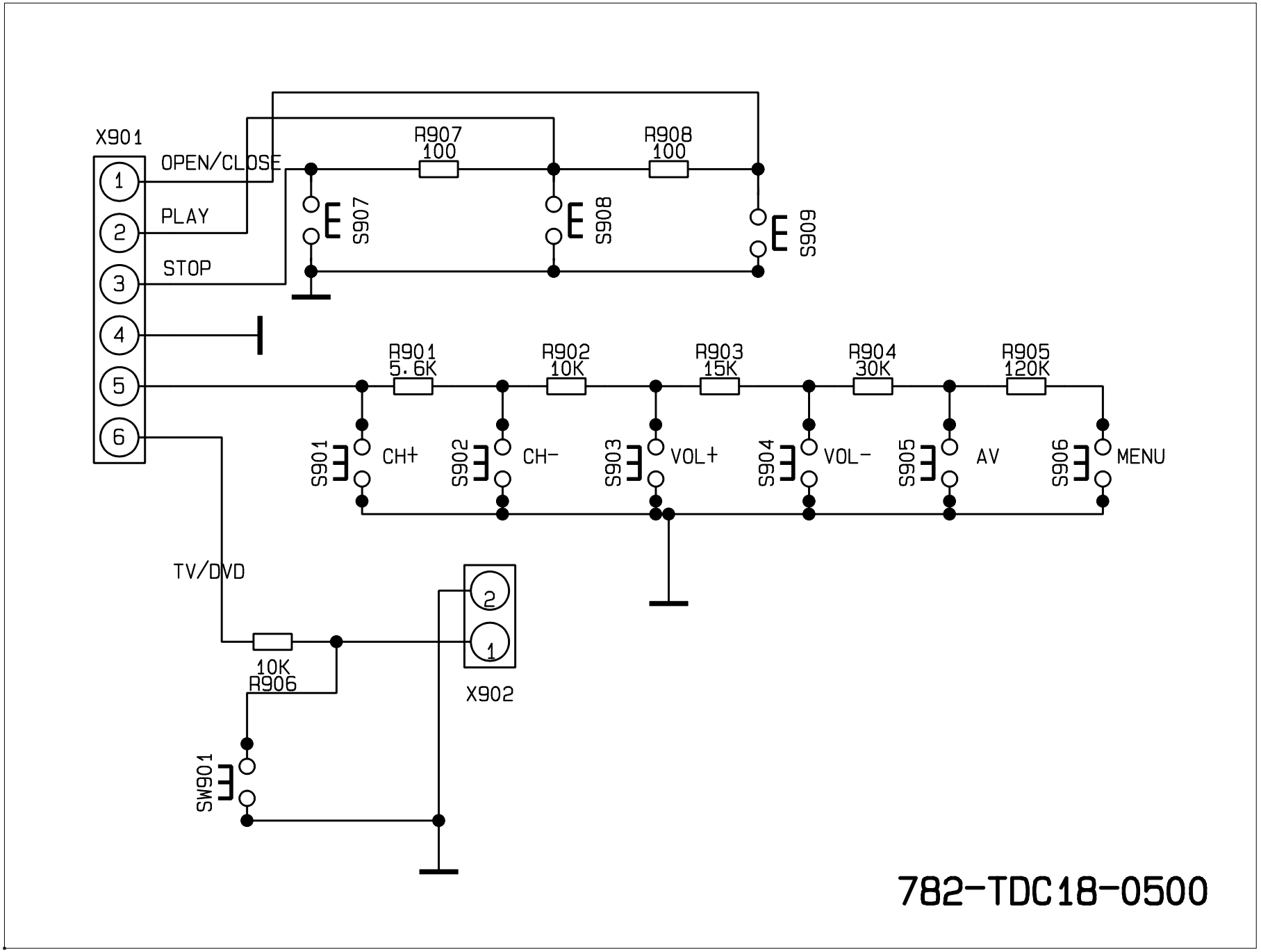


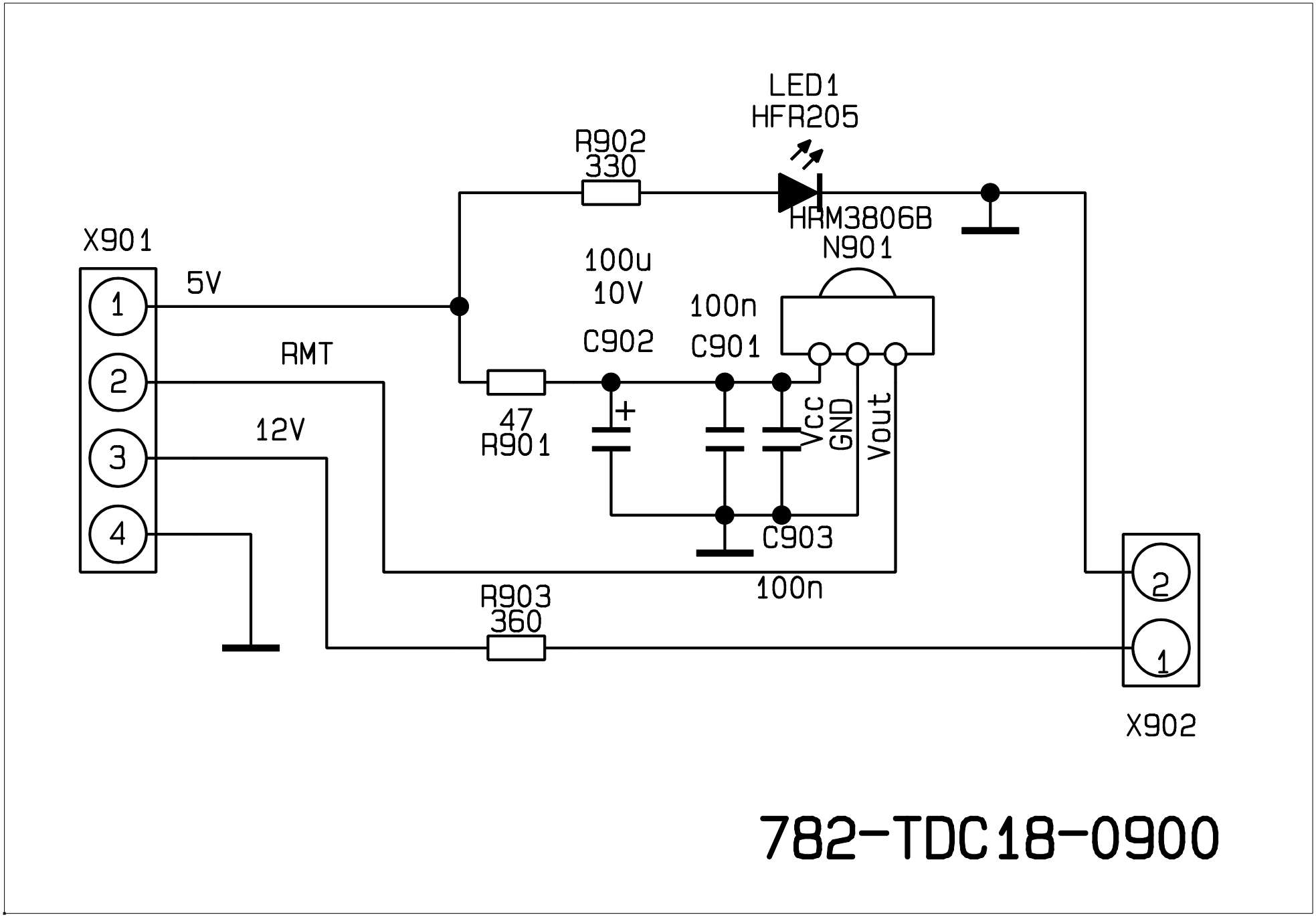

(TOP VIEW)

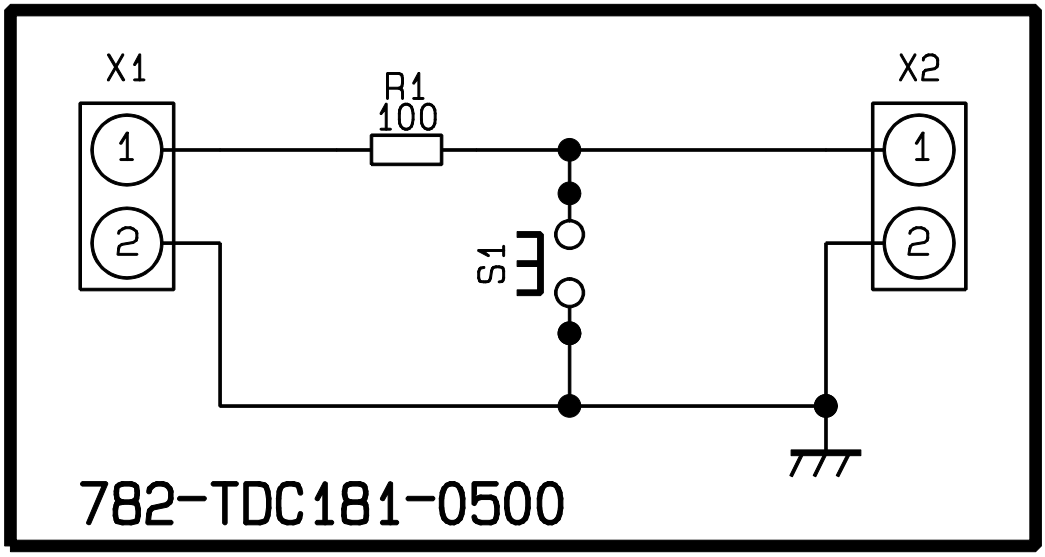

X401
RDT
GND
130V
12V
SVM
X407
X404
GZS10-2-108
K.R
K.G
K.B
HV
FV
SV
X406
X414
X405
X402
GND
B
G
R
9V
X403
240V

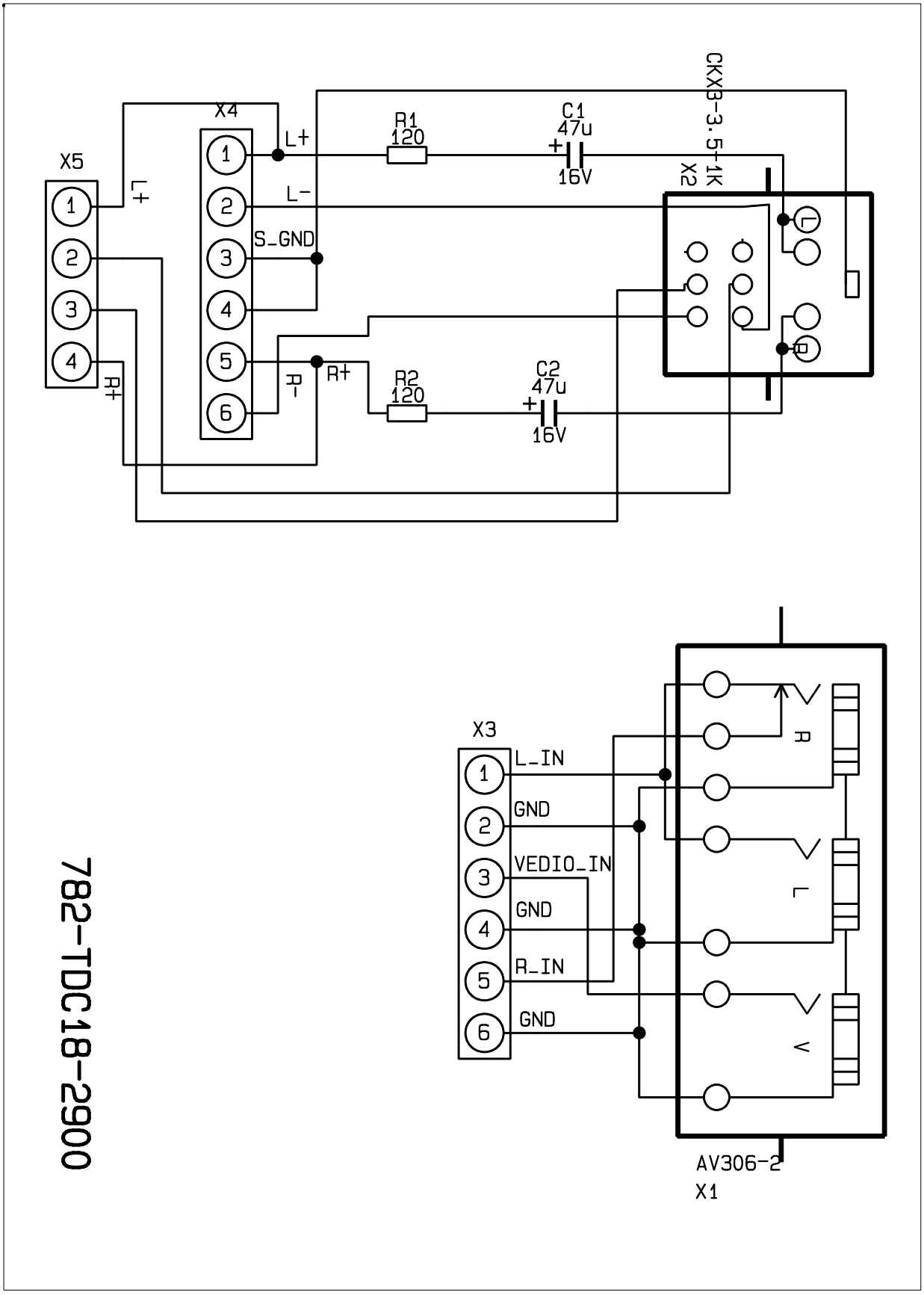

X501
X502
X503
FU501
4A/250V
R502
8.2M
C510
0.1u
275VAC
C503
0.1u
275VAC
R503
20
RY501
LCL-21
T502
400VAC
470p
C501
C505
470p
400VAC
C502
0.1u
275VAC
T501
LCL-21
0.1u
C506
275VAC
RS01
5D-15
4.7n 250VAC
C508
C507
4.7n 250VAC
RS405G
D501
AC
4.7n 250VAC
C504
C509
4.7n 250VAC
J0X-115F/012-1H-1
C514
1n
R515
8.2M
C523
2.2n
400VAC
TLP621-GB
N502
R510
4.7K
D509
1N4148
C522
10n
T503
SD4949
N501
STR-G9656
OCP
Vcc
GND
Source
Drain
D504
1N4148
2SC2482
V501
R508
10K
1N4148
D510
R512
10
1/2W
V502
2SA1013-0
R506
10K
C521
0.1u
HZ16-1*
D505
1N4148
D503
35V
1N4148
D507
R513
2.2K
47u
C517
680
R507
D511
1N4148
R514
3.6
1/2W
D508
1N4148
R509
82K
1W
TRU1P
D506
C519
6n8
400V
C512
1KV
470p
R504
3.3K
D502
TRU3A
R505
0.1
2W
100mH 8A
L501
C520
330p
500V
D512
FMLG12S
400V
C511
1u
2KV 1n
C513
450V
C516
220u
C518
10n
R511
33K
1W
GND
53V
C527
HZ6C2
D518
2SC1815
R526
5.1K
R530
R517
1K
R521
560
V504
RP501
10K
R518
1K
R524
180K
R527
82K
1W
R528
330
D521
1N4148 HZ7A2
D522
1N4148
2SA1015Y
V506
D523
1N4148
C545
100u
35V
R532
33K
R533
R534
10K
D525
1N4148
SIGN367
V505
2SC2482
R531
10K
V507
KSE180
R536
10K
V509
2SC1815-0
HZ9C3
D529
C547
10u
470u
C554
GND
X504
C528
1.5n
12
1W
R519
1KV
C525
470p
1KV
D514
TBYT56J
C526
1n
1KV
R525
10K
200V
C536
470u
C541
1n
500V
20K
2W
R535
C548
100u
R538
47
C546
10u
V508
KSE180
D524
HZ6A3
100u
C551
TJC3-07A
X507
D513
TEU2YX
24K
R522
160V
10u
C529
56
1W
R523
2SA1668
V503
R529
1.5K
25V
C540
470u
TRU3YX
D515
500V
470p
C530
TEU2YX
D520
C537
1000u
C543
10n
N503
PQ05RD21
@pinCo
@pinCo
@pinCo
@pinCo
R516
1
1W
TRU3YX
D516
500V
470p
C531
C538
1000u
C544
10n
X505
R537
0.47
500V
470p
C532
TRU4YX
D517
63V
10n
C534
35V
470u
C535
C549
100u
25V
C552
47u
25V
R520
1
TRU4YX
D519
500V
470p
C533
C539
470u
35V
C542
10n
N504
PQ05RD21
@pinCo
@pinCo
@pinCo
@pinCo
X506
C550
100u
25V
C553
47u
25V

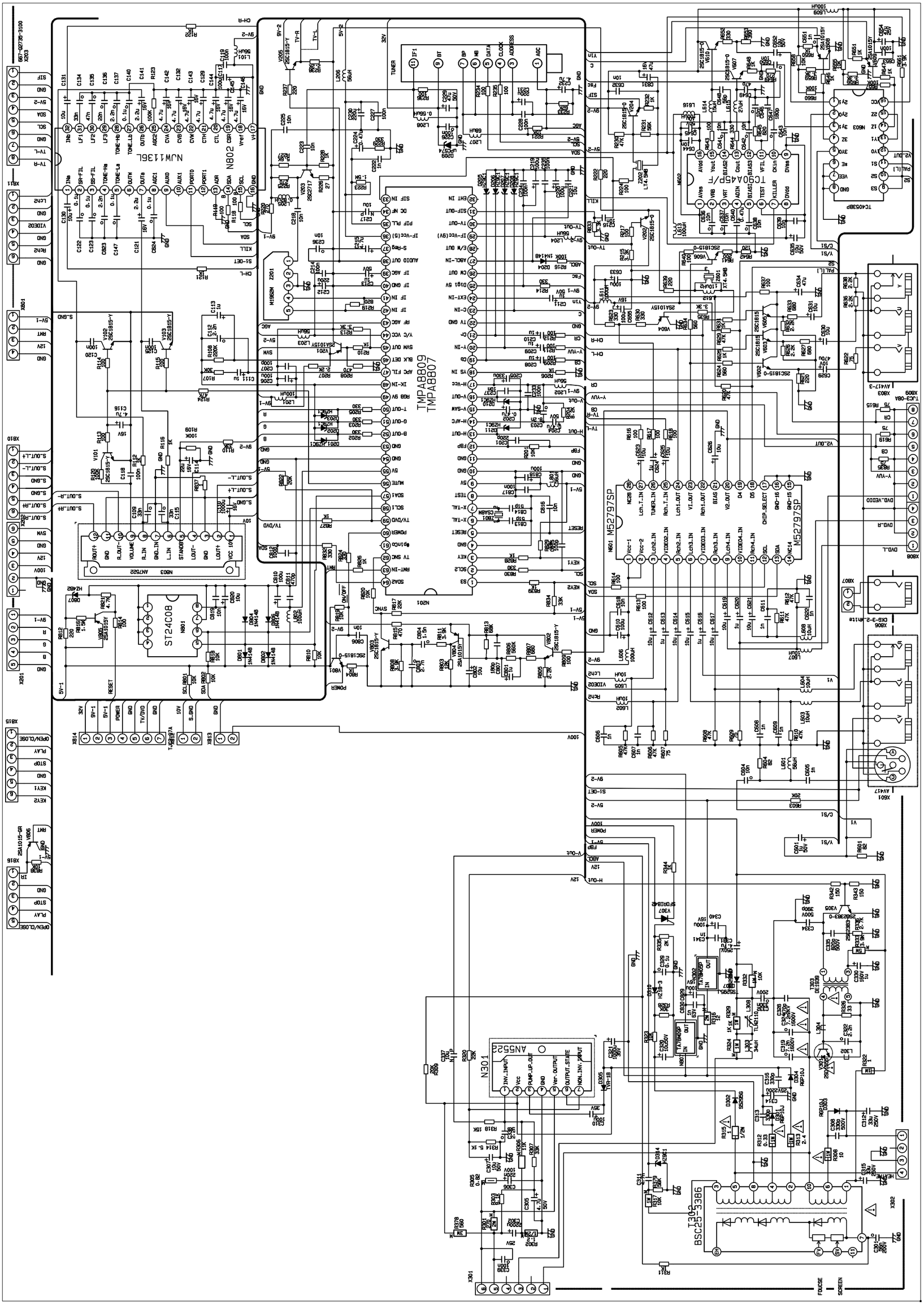

NS01
AN5832SA
1 NC
2 WB TIME
3 WB DET
4 SPE TIME
5 SPE DET
6 SPE FIL
7 I2C/PARA
8 AGC SW
9 MODE
10 FOMO
11 MUTE
12 SIF/BB
13 NOISE DET
14 SAP DET
15 L+R REF
16 NC
32 L-R DEF
31 NC
30 Lout
29 Rout
28 AGC DET
27 SCL/STID
26 PE
25 GND
24 SDA/SAPID
23 STEREO REF
22 SIFREF
21 INPUT
20 NC
19 VCC
18 PLL
17 PILOT DET
CS01 10UF
CS02 0.33UF
CS03 3.3UF
CS04 0.1UF
CS05 0.022UF
CS06 0.1UF
CS07 0.033UF
CS08 2.2UF
CS09 0.33UF
CS10 0.1UF
CS11 0.22UF
CS13 1000P
CS14 4.7UF
CS15 2.2UF
CS16 2.2UF
CS17 2.2UF
CS18 2.2UF
CS19 100UF
CS20 2.2UF
CS21 0.1UF
LS01 0.68UH
R101 3.3K
RS02 180K
RS03 1K
RS04 100
RS05 680
RS06 100
RS07 100
RS08 1K
RS09 100
RS10 680
VS01
VS02
5V
GND
+5V
Rout
Lout
GND
SCL
SDA
+5V
GND
SIF
XS01
782-Q2735-3100


X901
1
2
3
4
5
6
OPEN/CLOSE
PLAY
STOP
R907
100
R908
100
S907
S908
S909
R901
5.6K
R902
10K
R903
15K
R904
30K
R905
120K
S901
CH+
S902
CH-
S903
VOL+
S904
VOL-
S905
AV
S906
MENU
TV/DVD
10K
R906
SW901
2
1
X902
782-TDC18-0500


LED1
HFR205
R902
330
HRM3806B
N901
X901
5V
100u
10V
C902
100n
C901
RMT
47
R901
12V
Vcc
GND
Vout
C903
100n
R903
360
X902
782-TDC18-0900


X1
R1
100
X2
1
2
1
2
S1
782-TDC181-0500


X5
X4
L+
L-
S_GND
R+
R-
R1
120
C1
47u
16V
R2
120
C2
47u
16V
CKXB-3.5-1K
X2
X3
L_IN
GND
VEDIO_IN
GND
R_IN
GND
AV306-2
X1
782-TDC18-2900


TMPA8809
TMPA8807
M52797SP
TC9QA45P/F
NJW1136L
ST24C08
AN5252
BSC25-3386
TUNER
FOCUSE
SCREEN

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PERCAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 1&2 OF THIS MANUAL.

CAUTION: 1. The shaded areas makes in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with type identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2.
2. Do not degrade the safety of the receiver through improper servicing.

# ELECTRICAL PARTS LIST

## MAIN BOARD

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| | 782-TDD18-0100 | MAIN PCB |
| **DIODE** | | |
| D303 | 340-00014-00 | RGP10J |
| D315 | 340-00014-00 | RGP10J |
| D313 | 340-00014-00 | RGP10J |
| D312 | 340-00070-00 | ERD07-15 |
| D806 | 340-00001-003 | 1N4148 |
| D804 | 340-00001-003 | 1N4148 |
| D802 | 340-00001-003 | 1N4148 |
| D801 | 340-00001-003 | 1N4148 |
| D204 | 340-00001-003 | 1N4148 |
| D309 | 340-00001-003 | 1N4148 |
| D307 | 340-00005-003 | S5295J |
| D302 | 340-00010-003 | S5295G |
| D301 | 340-00014-003 | RGP10J |
| D304 | 340-00014-003 | RGP10J |
| D305 | 340-00086-003 | TVR-1B |
| **REGULATED DIODE** | | |
| D311 | 340-50200-003 | HZ2B1 |
| D807 | 340-50390-003 | HZ4B2 |
| D314 | 340-50910-003 | HZ9C1 |
| D207 | 340-50910-003 | HZ9C1 |
| D208 | 340-50910-003 | HZ9C1 |
| D205 | 340-50910-003 | HZ9C1 |
| D206 | 340-50910-003 | HZ9C1 |
| D210 | 340-50910-003 | HZ9C1 |

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| D211 | 340-50910-003 | HZ9C1 |
| D203 | 340-50910-003 | HZ9C1 |
| D202 | 340-50910-003 | HZ9C1 |
| D201 | 340-50910-003 | HZ9C1 |
| D310 | 340-51850-003 | HZ18-3 |
| **TRANSISTOR** | | |
| V608 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V609 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V805 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V804 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V604 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V201 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V303 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V306 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V304 | 343-10150-104 | 2SA1015Y Pr2.5 |
| V806 | 343-10150-704 | 2SA1015GR |
| V101 | 343-18150-114 | 2SC1815-Y |
| V102 | 343-18150-114 | 2SC1815-Y |
| V103 | 343-18150-114 | 2SC1815-Y |
| V802 | 343-18150-114 | 2SC1815-Y |
| V803 | 343-18150-114 | 2SC1815-Y |
| V205 | 343-18150-114 | 2SC1815-Y |
| V801 | 343-18150-604 | 2SC 1815-0 |
| V610 | 343-18150-604 | 2SC 1815-0 |
| V204 | 343-18150-604 | 2SC 1815-0 |
| V607 | 343-18150-604 | 2SC 1815-0 |
| V606 | 343-18150-604 | 2SC 1815-0 |
| V202 | 343-18150-604 | 2SC 1815-0 |
| V602 | 343-18150-604 | 2SC 1815-0 |
| V603 | 343-18150-604 | 2SC 1815-0 |
| V605 | 343-18150-604 | 2SC 1815-0 |
| V362 | 343-18150-604 | 2SC 1815-0 |
| V203 | 343-27170-004 | 2SC2717 |
| V307 | 343-00420-40 | SFORIB42 |
| V361 | 343-13200-00 | 2SA1320 |
| V305 | 343-23830-60 | 2SC2383-0 |
| V301 | 343-20090-80 | ST2009DHI |
| V302 | 343-38520-00 | 2SC3852 |
| **CRYSTAL** | | |
| Z801 | 329-58001-00 | 8MHZ |
| **IC** | | |
| D209 | 352-05740-00 | uPC574 |

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| N802 | 352-11660-10 | NJW1166 |
| N801 | 352-24080-00 | ST24C08 |
| N603 | 352-40530-00 | TC4053BP |
| N601 | 352-52797-20 | M52797SP |
| N301 | 352-55220-00 | AN5522 |
| N803 | 352-75220-00 | AN7522N |
| N302 | 352-78050-40 | TA78M05P |
| N807 | 352-78090-40 | TA78M09P |
| N201 | 352-88070-00 | TMPA8807PSAN |
| N602 | 352-90450-50 | TC90A45P |
| **SAW FILTER** | | |
| Z201 | 458-07008-00 | M1962M |
| **WIRE-ROUND RESISTOR** | | |
| R333 | 467-B0239-H0 | RX25-5W-3.9K-J |
| R302 | 467-6FA12-H0 | RX21-1-1.2Ω-J |
| **METAL RESISTOR** | | |
| R306 | 467-2D311-F0 | 1/4W-11K-F |
| R305 | 467-2EB82-H0 | 1/2W-0.82Ω-JL |
| R339 | 467-2F351-H0 | 1W-51kΩ-JL |
| R329 | 467-2F210-H0 | 1W-1KΩ-JL |
| R324 | 467-2F210-H0 | 1W-1KΩ-JL |
| R332 | 467-2F310-H0 | 1W-10kΩ-JL |
| R317 | 467-2F310-H0 | 1W-10kΩ-JL |
| R341 | 467-2GA56-H0 | 2W-5.6Ω-JL |
| R316 | 467-2G012-H0 | 2W-12Ω-JL |
| R301 | 467-2G127-H0 | 2W-270Ω-JL |
| **MELTABLE RESISTOR** | | |
| R315 | 467-4E001-H0 | 1/2W-1Ω-JL |
| R312 | 467-4FB33-H0 | 1W-0.33Ω-JL |
| R322 | 467-4F001-H0 | 1W-1Ω-JL |
| R313 | 467-4F001-H0 | 1W-1Ω-JL |
| R308 | 467-4F010-H0 | 1W-10Ω-JL |
| **INDUCTANCE WITH COLOUR CODES** | | |
| L208 | 471-2B56K-003 | SPT0305-R56K-5 |
| L205 | 471-2B82K-003 | SPT0305-R82K-5 |
| L207 | 471-2068K-003 | SPT0305-680K-5 |
| L611 | 471-2110K-003 | SPT0305-101K-5 |
| L203 | 471-1056K-00 | EL0606SK1-560K |
| L612 | 471-2010K-A0 | SP0203-10uH-K |
| L605 | 471-2010K-A0 | SP0203-10uH-K |
| L602 | 471-2010K-A0 | SP0203-10uH-K |
| L603 | 471-2010K-00 | SPT0305-100K-5 |

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| L604 | 471-2010K-00 | SPT0305-100K-5 |
| L607 | 471-2010K-00 | SPT0305-100K-5 |
| L608 | 471-2010K-00 | SPT0305-100K-5 |
| L614 | 471-2015K-A0 | SP0203-15uH-K |
| L615 | 471-2027K-A0 | SP0203-27uH-K |
| L202 | 471-2056H-60 | LGA0307-56uH-J |
| L101 | 471-2056H-60 | LGA0307-56uH-J |
| L801 | 471-2056H-60 | LGA0307-56uH-J |
| L204 | 471-2056H-60 | LGA0307-56uH-J |
| L206 | 471-2056H-60 | LGA0307-56uH-J |
| L601 | 471-2056K-00 | SPT0305-560K-5 |
| L616 | 471-2110K-A0 | SP0203-100uH-K |
| L613 | 471-2110K-A0 | SP0203-100uH-K |
| J208 | 471-2110K-A0 | SP0203-100uH-K |
| L802 | 471-2110K-A0 | SP0203-100uH-K |
| L201 | 471-2110K-A0 | SP0203-100uH-K |
| L609 | 471-2110K-A0 | SP0203-100uH-K |
| L606 | 471-2110K-00 | SPT0305-101K-5 |
| **CEMENT RESISTOR** | | |
| R370 | 467-50A56-H0 | RX27-1-5-5.6Ω-J ! |
| **FIXED INDUCTANCE** | | |
| L305 | 477-40128-00 | LE1940 |
| **H-DRIVE TRANSFORMER** | | |
| T303 | 472-10001-00 | XR0961 |
| **CERAMIC FILTER** | | |
| Z202 | 475-15451-00 | LT4.5MH |
| **CERAMIC TRAP FILTER** | | |
| Z601 | 475-25451-00 | XT4.5MB |
| **H-LINEARITY COIL** | | |
| L303 | 477-00065-00 | HL1830H-X13 |
| **FBT** | | |
| T302 | 472-25117-00 | BSC29-3318 ! |
| **OTHER** | | |
| TUNER | 590-40707-00 | 115-B-8035AZ |
| DEGAUSSING COIL | 477-12501-00 | BD-205-7 ! |
| POWER CORD | 491-7521D-02 | UL ! |
| CRT | 335-2512S-00 | A60CPAA00X02 ! |

# CRT BOARD

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| | 782-W2935-0200 | CRTPCB |
| **TRANSISTOR** | | |
| V411 | 343-05620-10 | 2SA562TM-Y |
| V415 | 343-10150-10 | 2SA1015Y |
| V401 | 343-18150-11 | 2SC1815-Y |
| V402 | 343-18150-11 | 2SC1815-Y |
| V404 | 343-18150-11 | 2SC1815-Y |
| V406 | 343-18150-11 | 2SC1815-Y |
| V408 | 343-18150-11 | 2SC1815-Y |
| V409 | 343-18150-11 | 2SC1815-Y |
| V410 | 343-18150-11 | 2SC1815-Y |
| V413 | 343-18150-11 | 2SC1815-Y |
| V414 | 343-18150-11 | 2SC1815-Y |
| V416 | 343-19640-30 | 2SA1964E |
| V403 | 343-26880-60 | 2SC2688M |
| V405 | 343-26880-60 | 2SC2688M |
| V407 | 343-26880-60 | 2SC2688M |
| V417 | 343-52480-30 | 2SC5248E |
| **CRT SOCKET** | | |
| X404 | 364-58210-00 | GZS10-2-102G ! |
| **METAL RESISTOR** | | |
| R443 | 467-2E010-H0 | 1/2W-10Ω-JL |
| R401 | 467-2E047-H0 | 1/2W-47Ω-JL |
| R444 | 467-2E133-H0 | 1/2W-330Ω-JL |
| R458 | 467-2F122-H0 | 1W-220Ω-JL |
| R432 | 467-2G312-H0 | 2W-12kΩ-JL |
| R434 | 467-2G312-H0 | 2W-12kΩ-JL |
| R437 | 467-2G312-H0 | 2W-12kΩ-JL |
| **CARBON RESISTOR** | | |
| R433 | 467-8E227-H1A | 1/2W-2.7KΩ-J ! |
| R435 | 467-8E227-H1A | 1/2W-2.7KΩ-J ! |
| R436 | 467-8E227-H1A | 1/2W-2.7KΩ-J ! |
| **INDUCTANCE WITH COLOUR CODES** | | |
| L401 | 471-1056H-00 | EL0606SKI-560J |
| L402 | 471-2110K-00 | SPT0305-101K-5 |
| **DIODE** | | |
| D401 | 340-00001-00 | 1N4148 |
| D402 | 340-00001-00 | 1N4148 |
| D403 | 340-00001-00 | 1N4148 |
| D404 | 340-00001-00 | 1N4148 |

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| D405 | 340-00001-00 | 1N4148 |
| D407 | 340-00001-00 | 1N4148 |
| D408 | 340-00001-00 | 1N4148 |
| D409 | 340-00001-00 | 1N4148 |
| D410 | 340-00001-00 | 1N4148 |

## INFRARED SENSOR BOARD

| SYMBOL | PART NO. | DESCRIPTION |
|---|---|---|
| | 782-TDC18-0900 | INFRARED SENSOR PCB |
| **LIGHT-EMITTING DIODE** | | |
| LED1 | 340-10039-20 | HFR205 (RED) |
| **IC** | | |
| N901 | 352-03810-80 | AT138B-T12 |